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CONSUMER ATTITUDES TOWARD BEEF

by



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A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled Consumer Attitudes Toward Beef, submitted by Sheila Carleen McFadyen in partial fulfilment of the requirements for the degree of Master of Science.





## ABSTRACT

The repertory grid technique was used to disclose the factors consumers use to differentiate meats. These factors were incorporated into a semantic differential survey, which was carried out in Calgary, Edmonton and Vancouver. A total of 1469 surveys were completed and analyzed for differences on the basis of city, socioeconomic groups and age of respondent. City and socioeconomic group did not have a marked effect on attitudes, however age was an important factor influencing attitudes. The results of correlations between factors disclosed that "tenderness", "nutrition" and suitability for special guests were most closely related to the acceptability of all the meat cuts studied. Other factors related to acceptability were "fat", "waste", and "packaging". These factors were interpreted in the way that they were conceptualized by consumers.

Some beef cuts (broiling steaks and oven beef roast) had high overall acceptability scores. The acceptability scores for the other beef cuts were widely distributed throughout the range for all meats and meat cuts studied. The apparent preference for beef over other types of meats was attributed to the variety of cuts and prices, and hence the large quantity of display space allocated to beef in the super-market.

Promotion of beef should be undertaken with consideration for the images and uses of beef cuts. Attitudes to beef were studied on the basis of the dimensions of evaluation, potency and activity. The potency and activity dimensions of attitude toward beef have potential





for use in promotion of some cuts. The need for promotion of beef is emphasized by the lack of real preferences for beef. Effective promotion and marketing of other meat types could result in increased substitution of other meats for beef. Promotion of beef products and increased information and education programs should be undertaken by the beef industry.





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## INTRODUCTION

Agriculture accounts for one fifth of Alberta's total net value of production. Of this, beef production represents the largest segment, and has potential for expansion. The beef industry of Alberta also accounts for a large proportion of the business of meat packers, feed manufacturers, and tanners in the Province. Expansion of the beef industry could stimulate an expansion of these associated industries.

Sound expansion of the beef industry depends on maintaining and developing markets for Alberta beef. At present, more than half the beef produced in Alberta is marketed in Eastern Canada and British Columbia. Alberta beef provides 40 to 50 percent of the Montreal market requirement, and a part of the production-consumption deficit of the British Columbia market. These markets also import beef from New Zealand and Australia to meet their requirements for both table and manufacturing beef.

Foreign export markets for Alberta beef have not been developed. Occasional excesses have been exported to the United States. The current investigation of Alberta's potential to market a "Kobe"-type carcass on the Japanese market, is an exception to the established practice of exporting production residues, when they occur.

Increases in domestic demand have supported the expansion of the beef industry for the past 25 years. This increased demand resulted mainly from the rapid population growth and the large increases of disposable income that occurred in the post-war period. Williams and





Stout (1964) state that the beef industry is unlikely to encounter another period in which so many factors, favourable to an increased demand for beef, will occur. Canada's population growth rate is slowing down, and population growth will cease to provide a basis for the expansion of Canada's food industry. Only projected increases of disposable income of Canadians will continue to produce increased demand for beef.

Other meats have not been strong competitors for the consumer's meat dollar. Canadian beef consumption has increased so that it accounts for half of the total meat consumed. During this period of increased meat consumption, the per capita consumption of other meats has remained low. However, competition for the consumer's food dollar is becoming more intense. Other meat industries in Alberta, especially hog and poultry, and also sheep, would like to improve their share of the meat market, through increased consumption. Although these products are not direct substitutes for beef, effective promotion could improve their acceptance and bring them into competition with beef. Simultaneously, the food industry is producing meat analogs from vegetable proteins, with the apparent intention of competing with specific meats. It appears that these products have not provided strong competition for fresh meats because of their cost and poor consumer acceptance. Nevertheless, with consumer concern about the role of animal fats in the diet, these meat analogs represent a potential threat to the beef and other meat industries.

The beef industry is production orientated, that is, the



consumer is expected to adapt to the product available. Marketing orientation would result in production being aimed at satisfying consumers' needs and desires. Williams and Stout (1964) in their textbook, "Economics of the Livestock - Meat Industry", state that "the welfare of the entire meat industry rests ultimately on the extent to which the industry makes adjustments consistent with maximum consumer satisfaction". Consumer tastes and preferences are a determinant of the demand function. A knowledge of consumer tastes and preferences can be used to create products and product images, which improve consumer satisfaction through promotion.

This study was undertaken to gather information about consumer attitudes and opinions which are a necessary basis for advertising and consumer education directed toward maintaining and improving preferences for beef. The attitudes will provide the basis for effective use of emotional appeals in advertising. The opinions will disclose areas where lack of sound information can be improved by consumer education.

Knowledge of consumer attitudes and opinions will also provide information on the product image of beef. Beef is viewed by the industry as a product, and retailed with the object of moving carcasses. If, for example, consumers perceive T-bone steak as a product, which is differentiated from ground beef and other beef cuts, there would be advantages to recognizing cuts as different products and merchandising them accordingly.

Product improvement and development should be directed toward meeting the needs and desires of consumers. Application of attitudes



which are specific to beef, to the trends in overall consumer attitudes will disclose the most effective areas for product development. The attributes of beef which will be desired by consumers 10 years from now must be part of beef, and its image, if beef is to retain its position as the preferred meat.





## REVIEW OF THE LITERATURE

Grading standards for beef were introduced in the United States in 1923. Prior to this, studies were done attempting to define beef quality in terms of the attributes preferred by consumers. The introduction of grading standards without sufficient knowledge of what quality meant to the consumer was criticized. It has been noted (Williams and Stout, 1964), and this review will further illustrate, that had the beef industry waited for clarification of consumer preferences before introducing the grading standards, they would still be without grading standards today.

The Canadian grading standards were introduced in 1929. Like the United States standards, they are producer orientated, and fail to define the eating quality of the meat to the consumer (Canada Agricultural Products Standards Act, 1958). It is not surprising, therefore, that after the introduction of the grading standards, studies were undertaken to relate the grades to consumer preferences for beef. Two of these studies, Ashby, Webb, Hedlund and Bull (1941) and Lasley, Kiehl and Brady (1955), are examined in this review. In recent years, the emphasis of consumer preference studies has become more diversified. Furthermore, there have been important changes in the methodology of preference studies, in survey and sampling techniques, and in understanding human motivation and food quality assessment. As a result, it is not difficult to be critical of the earlier studies.

Ashby et al. (1941) did not include their questionnaire in the report, sampling was not random, nor representative, and no account was



made of refusals. There is no assurance that the questions were developed on the basis of factors important to the consumer. Hence the questions, and the possible answers, could have been biased by researcher interest. Inconsistencies in the results might have been due to the respondents' lack of familiarity with the grades and the terminology used by the interviewers. Many of the questions referred to the innovation of beef grading, yet the responses indicated that the majority of respondents did not know if the beef they bought was graded or not. Only 53, out of 256 respondents, could give the name of a grade of beef.

Lasley et al. (1955) avoided the total dependence of their study on the respondent's interpretation of the questionnaire and the researcher's interpretation of the responses, by making direct observations of consumer behaviour, and subsequently questioning the reasons for that behaviour. However, the study was carried out in the unnatural environment of a laboratory and the researchers experienced sampling difficulties. In the experiment, only 18 out of 80 respondents were involved in all four replications.

Despite these experimental limitations, the results of these studies are frequently quoted, and they are summarized below.

Ashby et al. (1941) studied consumer and retailer reactions to beef grades in the United States. They also attempted to assess the basis of consumer decisions in buying beef, as well as consumer knowledge about beef. They discussed the importance of marbling, sex identification, colour of lean and fat, and the amount of fat in



relation to consumer acceptance of beef. They recommended that the beef should have "good" marbling, that the sex of the animal should be indicated, that the lean should be of a light to medium red, and that there should be less emphasis on the colour of fat in the grading. These recommendations arose from the observations that 85 percent of the respondents liked marbling in beef; that 72 percent favoured sex identification, most respondents preferred light to medium red lean; and that 35 percent of the respondents preferred yellow fat. These recommendations were made without regard to the meaningfulness of these preferences.

It was further reported that respondents claimed to be purchasing "good" or "best" beef. Concurrent sales statistics for beef sold at the stores in this study did not support this result. The authors concluded that "either the consumers don't know what good beef is, or they are giving an answer that they feel is acceptable."

This study also suffered from the basic deficiency that, like the grading standards, it is production orientated. This is reflected by the conclusion that "consumers especially need more education about what constitutes quality and what grades and brands mean so they will get the quality they want." McFadyen, Stiles and Hawkins (1972), in a study of retailer awareness of consumer demands for beef, noted that the retailers in Alberta are production orientated. This is perhaps a characteristic of the beef industry, and is true of the subsequent papers in which consumer preferences are discussed.

Lasley et al. (1955) carried out a study designed to evaluate





preferences for different amounts of fat in beef, to determine the criteria consumers use in choosing meat, to relate purchase choices to eating preferences and to relate preferences to income level. These authors exhibited extreme caution in the interpretation of their results, and from the study they concluded, "strictly tentatively", that:

1. From a full range of grades, consumers tend to choose lower grades;
2. Consumers are unfamiliar with the retail characteristics which differentiate grades;
3. Consumers are not able to evaluate the relative importance of visual characteristics in eating satisfaction;
4. Consumers are not acquainted with grades.

These authors also reported that consumer grade preferences were confounded by retail cut preferences, thus complicating any conclusions about the relation of grades and preferences.

In addition to qualifying their conclusions as being "strictly tentative", Lasley et al. (1955) stressed that the sample size in their study was recognized as being too small "to support any conclusions". However, subsequent beef preference studies have accorded these results unqualified acceptance. Barton (1970) appeared to be quoting these conclusions from Lasley et al. (1955), as reasons for the lack of success of preference studies related to grades.

Other studies of consumer preference have concentrated on the influence of specific meat attributes on consumer acceptance of beef. Van Syckle and Brough (1958) attempted to assess consumer awareness of



visible fat, the desirable characteristics of beef, and the characteristics considered in buying beef. The experiment involved home interviews with consumers, who had been observed and contacted at the time of choosing a cut of meat in the supermarket. The study did not include a pretest, but the first phase of the experiment was referred to as the "real pretest", because after the first phase, many improvements were incorporated into the study.

The authors acknowledged the short-comings of in-store observations of meat choices, and supplemented their in-store observations by home interviews with respondents. Particular note was made of the difficulty in interpreting tenderness judgements. Tenderness is a subjective quality, with no precise meaning to the consumer. The authors concluded that the respondents in this study tended to buy the grade of beef which they were accustomed to, that the main reasons for satisfaction were tenderness and flavour, and that the main reason for dissatisfaction was toughness. The colour of the fat was found to be relatively unimportant.

Coles (1956) conducted 1,125 interviews in 15 different food stores in Berkeley, California. The study revealed several difficulties that were experienced in assessing consumer preferences for beef. When respondents were asked their reason(s) for the selection of a particular cut of beef, 37 percent could give no reason. Under such circumstances, if respondents feel pressed for an answer, they will generally give socially acceptable answers (Morse, 1951). Hence, little confidence should be placed on the responses of the 63 percent who gave reasons for their purchase. However, 33 percent cited family



preference as their reason, 17 percent cited price, 10 percent quality and another 10 percent freshness.

Respondents in this study were also shown pictures of two grades of steak and roast. Two-thirds of the respondents cited marbling as the most important criterion in their selection of the preferred sample. The Choice grade cuts in the pictures were more highly marbled, yet only 36 percent chose the Choice roast and 38 percent chose the Choice steak. When questioned further, only 3 and 6 percent of the respondents said they would pay more for the preferred steak and roast, respectively. Clearly consumers have a poor concept of marbling, and reference to marbling in consumer studies is using a term of limited or no meaning to the consumer.

Dunsing (1958) carried out a study of consumer awareness on student families. Half of the panellists rated matched steaks differently, hence it was reported that either marbling and colour were inadequate determinants of eating quality, or the panellists were unable to judge these characteristics. Despite this lack of reliability, it was reported that panellists who preferred young beef ranked tenderness as being very important in their choice of beef, while panellists who placed greater importance on taste and juiciness preferred more mature beef.

Field, Schoonover and Nelms (1964) studied the carcass variables and acceptability of bull beef. The response to this mail-in survey was not given, but it appears that about 75 percent response was achieved. The results indicated that consumers did not discriminate against the darker, softer, coarser bull meat in their visual choices.



In palatability tests, however, bull meat was scored lower than comparable steer cuts, indicating that consumers could discriminate tenderness and flavour differences. Marbling was reported to be unimportant in the selection of rounds and loins. However, with cuts of steer beef, which had large quantities of fat, consumers selected the corresponding cut of bull beef.

This study indicated again that marbling was relatively unimportant in meat selection. These repeated observations about marbling confirm that this characteristic only becomes important when the consumer is faced with expressing an opinion about it. Furthermore, this study indicated the consumer's inability to relate visual characteristics to eating satisfaction. Other studies assumed that the consumer could make this judgement, but failed to test it. It would appear that the consumer has limited means of assessing eating quality from the appearance of the beef on the meat counter. While excess fat, colour and general appearance influence the selection of a specific cut, the consumer relies on the industry's evaluation of quality for eating satisfaction. It is toward the optimum eating satisfaction for the consumer, that the beef industry should be directing the development of its product, while optimizing conditions for production. Early maturing animals and growth promotants have received considerable attention from beef producers, yet this form of maturity simply refers to modified fattening (Butterfield and Berg, 1972; and Cottrel, 1971), this may not be in keeping with the consumer's demand for beef.

Brayshaw, Carpenter and Philips (1965) reported that butchers felt that leanness, tenderness and flavour represented the order of





importance of these qualities to consumers. A market-place study of the relative importance of the same 3 factors was done by Brayshaw, Carpenter and Perkins (1967). The sample was representative of four large cities in the United Kingdom, and the results were slightly more conclusive than those of earlier studies. However, the failure of the hanging periods (aging) to produce varying tenderness of the carcasses limited conclusions that could be drawn with respect to tenderness. Flavour differences were assumed to be inherent in barley beef versus mature beef. Leanness was controlled by trimming.

It was demonstrated that either there was no flavour difference between carcasses, or consumers were unable to detect important flavour differences, or that garnishes disguised flavour differences. Results of visual examinations showed that consumers indicated preferences only when visual fat varied more than 16 percent, whereas, in palatability studies, 4 to 5 percent variations in visible fat content could be detected. On the other hand, Law, Beeson, Clark, Mullins and Murra (1965b) reported that the fat content of ground beef affected visual evaluation, but not palatability scores. This difference could be because fat does not constitute as important a source of tenderness and juiciness in ground beef as it does in steaks. Fat in ground beef may be viewed as waste.

Tenderness was found to be the most important palatability characteristic in steaks. Although aging did not achieve the desired variations in tenderness, natural variations in tenderness showed that the steaks which were most tender, rated the highest overall



preference. Brayshaw et al. (1965) and Law et al. (1965b) showed that the consumer's acceptance of visible fat depended on the cut of meat. Furthermore, Brayshaw et al. (1965) indicated that the butcher's appraisal of the consumer's acceptance criteria for meat were erroneous, in that tenderness, not leanness, was the most important factor.

Carpenter, Hinks and Perkins (1968) followed this study with an attempt to determine the price that consumers were willing to pay for their preference for tender, lean steaks. Their technique for controlled variation of tenderness failed again, so that the conclusions related only to leanness. Consumers were prepared to pay more for porterhouse steaks with 13 percent visible fat than those with 30 percent. The reasons for this preference were not established, however the authors concluded that it might be that consumers were willing to pay for leanness or some less obvious satisfactions, or that they were unable to estimate visual differences in fat content and relate these to price in the store.

Studies to delineate the quality characteristics which consumers preferred in ground beef were done by Law et al. (1965b) and Glover (1968). In these studies the hedonic scale ratings of specific characteristics of these meats was carried out. The data from these 9 point rating scales are ordinal, that is, the scores are not necessarily characterized by constant intervals between the ranks, and such data should not be used in a "normal" analysis of variance. Nonetheless, statistical methods of this type are frequently used on non-parametric data (Larmond, 1970). The Law et al. (1965b) study also



made use of incomplete returns and made a random selection of answers, in cases where more than one response was given. The samples of ground beef were sold to the consumer, at the time of the home interviews. This procedure causes respondents to be unnaturally critical of characteristics that they might normally overlook (Morse, 1951).

Law et al. (1965b) studied colour before cooking, shrinkage, general cooking qualities, juiciness and flavour. They reported that consumers preferred lean ground beef, but unlike the Carpenter et al. (1968) study, no assessment was made of the premium that consumers might pay for leanness. Respondents were critical of pre-cooked appearance and differences in cooking quality, but there was little variation in ratings of eating quality of ground beef with fat levels of 15, 25 and 35 percent. There was also an unexplained preference for ground beef in the bulk form, compared to a patty form, regardless of fat content. This could mean that another unexamined factor is more important in consumer preferences for ground beef, than the level of fat.

An extensive study of consumer opinions and attitudes about selected meats and meat products was carried out by the United States Department of Agriculture (Weidenhamer, Knott, and Sherman, 1969). The study was designed to give guidelines for programs of research, education and promotion, and included beef, chicken, fresh pork, ham, veal, lamb and some prepared meats. This publication did not indicate the origin or pretesting of the questions. The answers were mostly "forced choice". The reliability and validity of such questions depends largely on the respondents' ability and willingness





to understand the questions and their own motives (Morse, 1951; and Summers, 1970). The authors of the U.S.D.A. study noted that variations in willingness or ability of respondents to express opinions was a problem. Only frequency distributions were calculated from the data, for conclusions to be drawn.

Some of the conclusions reached which were directly related to beef included:

1. Quality is the first consideration in meat purchasing and none of the meats consistently satisfied this requirement.
2. Most complaints were concentrated on packaging, specifically concealed fat and bone.
3. Little interest was shown in buying frozen meats due to the feeling of inability to judge freshness, despite frequent home freezing of purchased meats.
4. The majority expressed an interest in learning more about meat preparation and new recipes. Only 3 out of 10 respondents had tried a new recipe in the past three months. Most interest was shown in new recipes for the most frequently used meats -- ground beef and chicken.
5. Respondents were confused about grading.
6. The only unfavourable characteristic which was associated with beef was the expensiveness of beef steaks.
7. Beef is used less frequently by low education - low income groups than by high education - high income groups.
8. Generally, ground beef was used frequently, but older and



smaller households served it least often.

9. Income was not directly related to frequency of using ground beef.

These results gave a comprehensive picture of meat usage in the United States.

From a list of 14 possible characteristics, it was concluded that beef had an "image" of being tasty, easily digested, versatile, healthful, little waste and not tiresome. This "image" is limited by the researchers' knowledge of the most important dimensions of consumers' attitudes to beef. Furthermore, the "image" does not show the relative importance of these characteristics in consumer preference for beef. Before this information can be useful in promotion, all dimensions and their interrelationships must be disclosed. The most important of these are symbolic and emotional (Dichter, 1969). While this study provided valuable information on consumer opinions about meats, the "image" developed for beef might be questioned. Dichter (1969) noted that promotion based on functional aspects of image were relatively insignificant to the consumer, and were not as effective as promotion based on strong emotional aspects.

There is an interesting conflict in the results, arising from the question relating to interest in new recipes. The results indicated a desire for new recipes, yet only a small proportion of respondents had made use of a new recipe in the past 3 months. This suggested either a lack of recipes available, or poor recall of information, or the respondent giving a socially acceptable response. The problem of respondents not admitting laziness has complicated marketing research



on convenience products, such as instant coffee (Herzog, 1966) and cake mixes (Mahatoo, 1968). This might have influenced the responses to this question about recipes.

In Canada there have been few studies of consumer preferences for agricultural products. A study in Ontario, of attitudes to pork (Opinion Research Corporation, 1971) revealed the prevalence of some misconceptions about pork, but did not contribute any more information about meat attitudes than the U.S.D.A. study (Weidenhamer et al., 1969). A study sponsored by the Consumer's Association of Canada (1970) gave no more than an indication of the opinions expressed by the specific consumers contacted. Extrapolation of their data, to relate to attitudes of Canadians was unjustified. Faryna (1971) studied consumer attitudes to frozen pork. This study used extended interviews, with potential for disclosing more information about emotional and symbolic attitudes.

The most recent study of consumer's beef preferences was done by Juillerat and Kelly (1971). The object was to relate characteristics of the carcass and/or top round to consumer preferences to provide information for grade evaluation and grading changes. Two of the three initial assumptions of this study were not supported by earlier findings, notably, that consumers can detect quality differences between carcasses, and that consumers' requirements of beef are homogeneous. Results showed that, in terms of juiciness, tenderness, and flavour, preferences were not significantly related to grades, although marbling was related to grade. Using objective measures, a relationship between these quality characteristics and grade was shown, but many questions remained unanswered. Juillerat and Kelly (1971) posed the following



questions, which they felt had not been answered: What characteristics are important to consumer quality evaluations? Can consumers detect differences in quality? Are consumer panels typical? Are consumer tastes heterogeneous?

The question about panels can be answered in relation to this study. They chose 2,500 families and received 950 replies. No households were used unless there was both a husband and a wife. The resulting panel therefore represented households with both married partners, where there was interest in the topic. The remaining questions have been asked many times before. There is no evidence that juiciness, tenderness, and flavour are either the only, or the most important characteristics in consumer quality evaluations. Nor is there evidence that consumers are able to discriminate quality differences based on these characteristics, either visually or organoleptically. The question of homogeneity of consumer tastes for beef is indirectly answered by the variability in tastes for any product (Krugman and Hartley, 1966). The degree of homogeneity of tastes depends upon the homogeneity of the factors which influence tastes.

In reviewing the findings of preference studies in relation to beef, Williams and Stout (1964) separated the observations into visual and eating preferences. They listed the shortcomings of the visual studies as: (1) limited geographical coverage, (2) limited number of respondents, (3) limitations of sampling of beef within carcass grades, (4) inadequate treatment of the price variable, and (5) consumer's limited prior knowledge and experience.





The geographical problem is common to all marketing research. Preferences vary from one market to another and market segmentation is recognized as a technique of maximizing sales by capitalizing on these differences (Lunn, 1969). Individual studies are related to limited areas by economic necessity. But the variability between areas would possibly be obscured by more encompassing studies, and this variability gives valuable marketing information.

Most of the studies are not restricted by sample size, but do not represent the population. Sample size requirements for measuring characteristics of unknown variance are related to the number of variables and the number of classifications into which results are separated (Matthews, 1969). Most of the preference studies measure a limited number of variables and only classify results by income group. The variability within and between grades of beef (Fredeen, 1970) is not effectively controlled in most of the preference studies.

The price that consumers will pay for their preferences is the real indicator of how their preferences will affect their behaviour (Carpenter et al., 1968). Most attempts to relate preferences to behaviour have been limited by complications of carcass variability and lack of consumer knowledge. The limitations of consumer knowledge and experience is an immeasurable and often unrecognizable problem. Kiehl and Rhodes (1956) defined preference as "the choice or ordering of choices among two or more alternatives in a given environment. . . ." These actions require knowledge. "In many instances respondents appeared to have been unaware prior to the study of the existence in beef of two or more alternative products" (Williams and Stout, 1964). Hence



preferences are not measured in many of these studies.

Sensory evaluations of beef preferences were summarized by Williams and Stout (1964). Grade specifications of characteristics did not fully explain variations in sensory characteristics. Barton (1970) summarized the results of preference studies in relation to their potential contribution to improved grading and classification of carcasses. His conclusions included a point which was common to most of these studies. "Consumer tests measure a response to the visual impression consumers gain when making a decision. It is difficult to isolate the extent to which such tests measure consumer preferences or measure consumer ignorance." In other words, the validity, or the extent to which the variable in question is measured, is not known. The validity of findings determines "the utility of the inferred concept for understanding, predicting and influencing the behavior of individuals" (Bauer, 1966). The extent to which past preference studies have achieved this is definitely limited.

This review of the literature discusses consumer preferences for beef reported by other researchers, and critically assesses the validity of these studies from the standpoint of research methods. This review also distinguishes between consumer opinions and expert or trained panel studies of beef quality. The latter are intended to serve a specific purpose, which scientific instrumentation has failed to achieve. Many instruments for measuring parameters correlated with tenderness have been developed, and the Ottawa Texture Measuring System (Voisey, 1971) and other developments indicate that measures for tenderness and toughness might become objective measures in the future.



However, the subjective measures of flavour, juiciness and overall palatability are far from being resolved as objective measures. Trained taste panels are intended to fill the role that would otherwise be filled by an "organoleptic" instrument, and hence the results of studies incorporating these measures are not appropriate to this study or this review.

The review distinguishes between the apparent and the functional factors in consumer preferences for beef. Apparent, or aesthetic, characteristics relate to colour of the lean and fat, and sex identification of the carcass. Consumers are unable to discriminate eating quality of beef, and aesthetic features are the main criteria used as indications of eating quality. To the extent that they do not affect or identify real eating quality, efforts should be made to educate consumers about these characteristics, so that breeding and production efforts can be directed toward real quality improvement. Furthermore, characteristics that are generally regarded as meaningful parameters of consumer preferences, have been shown in these studies to be meaningless, either because the consumer does not understand the terminology or because they do not relate to eating quality and do not influence beef selection by the consumer. A typical example of this is illustrated by consumer response to marbling.

It is apparent that, particularly in Canada, but also in the United States, further study of consumer attitudes to beef is necessary. This is of importance for the Canadian beef industry, if it wishes to merchandize and develop products which best satisfy consumer needs as opposed to merely selling what is produced.



## METHOD DEVELOPMENT

Much of the criticism of previous consumer studies on beef concerned biases resulting from researcher interest and inconsistent definition of the word, attitude. The object of the development of methods in this study was to disclose the factors relevant to consumer attitudes toward beef - thus controlling researcher biases - and to define the use of "attitude."

### Literature

The American Marketing Association defined "attitude" as "a predisposition to behave in specific ways to specific stimuli" (Crespi , 1966). Many attitude studies do not satisfy this definition. Lunn (1969) categorized the common types of attitude studies in marketing research as: (a) over-all evaluations, (b) buying intentions, (c) specific beliefs about products (denotative and connotative), (d) specific product requirements, and (e) consumer values.

The information on consumer attitudes to beef is limited to overall evaluations, buying intentions and denotative (descriptive) characteristics. This attitude information is of limited value in understanding and predicting consumer behaviour. Overall evaluations indicate the relative preference for a product. Buying intentions are statements by consumers concerning the likelihood of their purchasing an item or product. Denotative characteristics are descriptive, and are only useful in identification. They do not have motivational





properties (Lunn, 1969). The "image" of beef (i.e. the connotative features which differentiate it from other meats and make it the preferred meat), the specific product requirements, and consumer values or general motivations, have not been disclosed by past studies. These aspects of attitude are important to understanding and predicting consumer behaviour.

The semantic differential is a scaling technique which can be readily adapted to measuring attitudes toward different concepts or products. Although many of the applications of semantic differentials are in relation to attitudes toward people, employers, jobs, and controversial situations (Heise, 1965; Osgood, 1964; and Triandis, 1959), surveys based on semantic differentials have been used for assessing consumer attitudes toward food products (Faryna, 1971; and Mindak, 1965). However the factors included in most semantic differentials on foods appear to be based on researcher interest. The semantic differential, based on factors (constructs) disclosed by the repertory grid technique, showed promise for developing a consumer orientated survey. The literature pertinent to the use of these techniques in this study is reviewed.

The semantic differential measures reactions to "stimulus" products or concepts on bipolar rating scales, with contrasting adjectives at each end. The adjectives can either be replaced by phrases or qualified by modifiers. The bipolar ratings tend to be correlated and 3 basic dimensions of attitude have been found to account for most of the covariation between ratings. The 3 dimensions are referred to as Evaluation, Potency, and Activity. Heise (1970) observed that these dimensions have been verified and replicated in many extensive studies,



and that the reliability and validity of the semantic differential technique has also been verified by many studies.

There are two basic criteria in the selection of the bipolar scales to be used in a semantic differential. The scales should be relevant to the product and they should be independent measures of the 3 basic dimensions (Heise, 1970). The relevance of the scales ensures sensitivity and reduces random error. Independence can be achieved by using established scales, which have been factor analyzed and are known to provide independent measures of Evaluation, Potency and Activity.

However, these factor-analyzed adjectival scales may not be appropriate for measuring attitudes toward all situations, concepts and products. When applied to specific products, some of the scales take on a different meaning, from that which was originally factor analyzed. For example, the scale of "hot" versus "cold", has been factor analyzed as an abstract or connotative scale. When such a scale is applied to a product, such as beef, it would be interpreted with different meaning. Thus some scales do not have semantic stability and should not be used indiscriminately. Heise (1970) notes this for motivation studies in politics, and observes that there are characteristic multi-dimensional scales, which are more relevant than the single-factor scales.

Furthermore, the rating scales used must be explicit and uniformly interpreted by respondents. They are only as reliable as the respondents' interpretation of them. Although the basic dimensions are constant across cultures, languages, ages and socioeconomic groups (Heise, 1970), the established rating scales have been developed in abstract contexts and primarily on the basis of college student ratings.



Their lack of relevance to a product, such as beef, and their lack of uniform meaning to a wide range of respondents makes them unsuitable for use in this study. There are techniques which can be used to discover the factors relevant to a product. Highly structured techniques provide reliable factors, at the expense of construct (factor) validity (Meyers and Alpert, 1968). The use of these techniques represents one of the main weaknesses of traditional attitude measurement. As indicated in the Review of Literature, the studies on beef often suffered from a lack of validity. Researchers have often assumed that simple, direct questions yielded simple, direct answers, without recognizing the barriers which make it difficult to get valid answers (Achenbaum, 1966).

Dichter (1969) states that "if you ask people why they eat steak or don't eat lamb, they give you nice-sounding, intelligent sounding rationalizations. We eat food for all kinds of mysterious, deep-lying psychological and symbolic reasons". Examples which Dichter gives, include the viewing of lambs as sacrificial animals and the association of femininity and weakness with poultry or "chicken". Thus, besides the limitations of consistency and memory, attitudes toward foods are complicated by many emotional and status factors.

The validity of measurements is improved by the use of techniques which surface the factors of emotion and status, without the consumer being aware of it (Achenbaum, 1966). Indirect or unstructured techniques designed to achieve this include projective techniques, group discussions, and unstructured interviews. These methods produce relatively valid factors, but with increased difficulty in analysis. These techniques are based on the assumption that consumers are more likely to reveal their



real feelings in response to situations or stimuli that do not involve them; in unstructured situations an individual is inclined to reveal his own motives and needs (Mahatoo, 1968). One of the problems with projective techniques is that more than 50 interviews are almost impossible to analyze. The data are so disparate that they are not amenable to objective tabulation (Achenbaum, 1966).

The repertory grid technique is projective in that it involves presenting consumers with a representation of a real situation. It provides an exhaustive list of psychological, as well as, functional factors which are relevant to the product and expressed in the vocabulary of the consumer (Lunn, 1969). At the same time, this technique produces data which can be objectively analyzed. Triandis (1958) employed the repertory grid method in the development of factors for a semantic differential to measure attitudes between employees. Frost and Braine (1967) outlined several alternate applications of this technique in the development of semantic differentials for measuring company and product images.

In choosing the most appropriate technique for disclosing factors relevant to a concept or product, it is important to consider the specific problem in question, the amount of past knowledge, and the kind of attitude areas being explored (Lunn, 1969). There is little information available on the factors relevant to consumer attitudes toward beef. It is important that the psychological as well as functional factors be considered because beef has strong emotional appeal (Dichter, 1969). It is important that the scales be expressed in vocabulary that is consistently meaningful to all respondents. For these reasons the





repertory grid technique was employed as an exploratory method for enumerating the factors relevant to consumer attitudes toward beef.

#### Repertory grid method for construct development

1. Sampling. Quota sampling was carried out in Calgary, Edmonton and Vancouver. The sample was intended to be representative of all 3 socioeconomic groups, of various age groups and family sizes, and of meat usage patterns. A total of 20 interviews was carried out in each centre. Previous research has indicated that only a limited number of surveys are necessary in this method of construct development (Frost and Braine, 1967).

The respondents were not known to the interviewers, and were selected by driving to areas of known socioeconomic rank and interviewing at the first 2 dwellings where an eligible respondent was home. The eligible respondent in each household was the person who cooked most of the meat. A household was defined as a person or group of persons occupying a dwelling, using the Federal Census definition (1971). The same source defined a dwelling as a separate set of living quarters, with a private entrance from outside, or from a common hallway or stairway, inside the building.

2. Questionnaire. The questionnaire used in the construct development survey was developed and pretested in Edmonton. The final form of the questionnaire



is shown in Appendix A. The questionnaire was organized with a few short-answer questions at the beginning of the interview, the construct development section in the middle, and personal family information was requested at the end of the interview. Except for the questions on Sheet A of the survey, the questions were asked and the responses recorded by the interviewer. Sheet A was completed by the respondent.

The questionnaire required a set of numbered cards (3" x 4"), each with the name of a different cut of meat printed on it. The number of meat cuts selected for this study was 22, based on the recommendation of Frost and Braine (1967) that the number of items should be between 10 and 30. This number was sufficient to include all of the main types and cuts of meat. The cuts and meats included in the study are shown in Table 1. Cuts of pork, poultry, and lamb, as well as beef cuts, were included. This was deemed to be a close analogy to the brand image studies, where competing brands are listed (Frost and Braine, 1967). Although cuts of different types of meat are not direct substitutes (Brandow, 1961), they compete for consumers' meat dollars in the same way that brands compete.

The interviews were conducted in the respondents' homes by trained interviewers. Only three interviewers were used, to limit between interviewer variability in the presentation of questions and in the recording of responses. The interview was conducted in the order in which the questions appeared on the survey.

After the initial questions had been asked and filled in by the interviewer, the respondent was presented with the deck of 22 numbered cards and asked to proceed as follows:



Table 1. Names of meat cuts used on the repertory grid survey cards.

<u>Number on Repertory Grid Survey</u>	<u>Number on Semantic Differential Survey</u>	<u>Meat Cut</u>
1	1.	Oven Beef Roast (cooked uncovered)
2	2.	Fresh Beef Sausage
3	3.	Pot Roast of Beef (cooked covered)
4	4.	Steak e.g. T-bone, sirloin, ribsteak
5	5.	Ground Beef
6	6.	Stew Beef
7	16.	Ham or Picnic
8	14.	Pork Roast
9	15.	Bacon
10	10.	Turkey
11	13.	Pork Chops
12	12.	Fresh Pork Sausage
13	--	Veal Roasts
14	19.	Lamb Chops
15	20.	Lamb Roast
16	11.	Chicken
17	18.	Wieners
18	17.	Cold Cuts e.g. bologna
19	--	Veal Cutlets
20	7.	Liver
21	9.	Chuck Steak
22	8.	Round Steak



1. To look at the cards and to remove any cards containing the names of meats which were totally unfamiliar.
2. To choose 3 cards at random from the remaining deck.
3. To examine the three cards, and to think of a way in which two of the meats were similar to one another, but different from the third meat.

Having differentiated between the three meats, and thus categorized them on the basis of a construct or factor which differentiates the meats, the respondent was then asked to separate the remaining cards in the deck on the basis of this construct. The interviewer recorded the results on the survey grid shown in the questionnaire (Appendix A, p. 169 ). Plus and minus signs were arbitrarily used to distinguish the categories into which the meats were divided. The three meats used in the development of the construct were identified by circles around the plus and minus signs in the corresponding cells.<sup>1</sup>

The deck was then reassembled, the cards shuffled and the procedure repeated with another three random cards drawn by the respondent. The results were again recorded in the manner described above, and the procedure was repeated until the respondent could not think of another construct for the three new cards drawn. The respondent then drew another three cards, if the respondent could give a construct, the procedure was continued, if no construct could be elicited for this set of cards, the interviewer asked the respondent to complete the

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<sup>1</sup>See example in Figure 1.





A. IF THE 3 CARDS DRAWN RANDOMLY BY THE RESPONDENT WERE:

6

STEW BEEF

9

BACON

4

STEAK

E.G. T-BONE

SIRLOIN

RIBSTEAK

B. THE INTERVIEWER ASKED: "HOW ARE TWO OF THESE MEATS DIFFERENT FROM THE OTHER MEAT AND SIMILAR TO ONE ANOTHER?"

C. A SAMPLE RESPONSE WAS: THAT STEW BEEF AND BACON DIFFER FROM STEAK IN THAT THE LATTER IS "MORE SUITABLE FOR SERVING TO GUESTS."

D. THIS FACTOR (CONSTRUCT) WOULD BE RECORDED BY THE INTERVIEWER AS FOLLOWS:

CONSTRUCT NUMBER	+	-
1	WOULD SERVE TO GUESTS - WOULDN'T SERVE TO GUESTS	
2		

E. THE RESPONDENT WOULD THEN CATEGORIZE THE REMAINDER OF THE DECK ON THIS BASIS AND THE RESULTS WOULD BE RECORDED BY THE INTERVIEWER AS FOLLOWS:

CONSTRUCT	MEAT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
		+	+	-	+	-	-	+	+	-	-	-	-	-	-	-	+	-	-	+	-	+	-
1																							
2																							

Figure 1. Example of construct development from 3 random cards.



remainder of the survey.

Respondents had to give different constructs each time they drew three cards. The same cards could be used twice, if they were drawn at random. None of the constructs were rejected by the interviewers, to avoid discouraging the respondents.

### Results and Analysis of the Construct Development Surveys

The 60 construct development surveys yielded 304 constructs. Many of these were different expressions of a single common idea. These were categorized according to the main ideas expressed, as shown in Appendix B (p. 178). The remaining constructs were categorized as denotative, complex, or specific to individuals. Those which were strictly descriptive and were based on recognized characteristics of the meats were classified as denotative. Complex constructs included those which depended on the judgement of more than one characteristic or quality of the meats, so that they might be interpreted differently by different respondents. Constructs specific to individuals, were those which were important only in the context of circumstances which were peculiar to a particular respondent. These categories are also shown in Appendix B (p. 178). The frequency distributions between categories are shown in Table 2. The distribution of the respondents by socio-economic and demographic groups and by meat usage patterns are shown in Tables 3a, 3b, 3c. The data from all three study centres were pooled for the development of a common semantic differential survey.



Table 2. Frequency distribution of repertory grid construct categories.

Categories	Frequency			
	CALGARY	EDMONTON	VANCOUVER	TOTAL
1. Relevant, single idea constructs				
Expressions of				
(a) time required for preparation	4	3	7	14
(b) suitability for seasonal cooking	3	9	1	13
(c) (i) versatility	7	6	4	17
(c) (ii) specific aspects of versatility	13	16	8	37
(d) nutritive value	7	2	5	14
(e) prestige	5	1	8	14
(f) fat content	10	5	5	20
(g) expense	12	12	16	40
(h) suitability for a main meal	11	7	11	29
(j) tenderness	2	2	1	5
(k) waste	1	2	3	6
(l) suitability for large groups	2	1	2	5
(m) popularity	3	3	8	14
(n) suitability for a meal-in-a-dish	1	3	1	5
(o) versatility of leftovers	0	1	2	3
2. Denotative constructs	6	10	16	32
3. Constructs peculiar to individuals	3	3	8	14
4. Complex constructs (constructs with impure or variable meanings)	7	7	8	22



Table 3a. Frequency distribution of socioeconomic variables for the repertory grid surveys.

<u>Variable</u>	<u>Response Distribution by City</u>		
	<u>Cal</u>	<u>Edm</u>	<u>Vnn</u>
Main wage earner's occupation			
Professional or Management	10	11	11
Other	10	9	9
Total income of the household			
< \$5,000	3	2	6
\$5,000 - 6,999	2	0	4
\$7,000 - 9,999	4	9	2
\$10,000 - 14,999	8	4	6
> \$15,000	3	5	2
Highest level of education completed			
.... by the housewife			
< High School	4	8	7
High School	10	7	7
University	6	5	6
.... by main wage earner			
< High School	6	5	6
High School	8	7	8
University	6	8	6





Table 3b. Frequency distribution of demographic variables for the repertory grid surveys.

<u>Variable</u>	<u>Response Distribution by City</u>		
	<u>Cal</u>	<u>Edm</u>	<u>Van</u>
Number of people in household			
< 3	3	3	11
3-4	11	9	6
> 4	6	8	3
Number of housewives employed			
Full time	3	2	3
Part time	5	6	2
Number of respondents born outside Canada	5	6	6
Countries of origin			
E. Europe	1	1	0
S. Europe	0	0	0
N. Europe	3	5	5
N. America	1	0	1
Age of housewife at last birthday			
< 26 years	2	4	3
26-55 years	16	15	11
> 55 years	2	1	6
Ages of household members			
< 6 years < range	0-3	0-3	0-3
mean	0.9	0.6	0.4
6-17 years < range	0-4	0-4	0-4
mean	0.8	0.8	0.4
> 17 years < range	0-4	0-7	0-5
mean	2.3	2.3	2.3



Table 3c. Frequency distribution of meat usage variables for the repertory grid surveys.

<u>Variable</u>	<u>Response Distribution by City</u>		
	<u>Cal</u>	<u>Edm</u>	<u>Van</u>
Number of respondents buying fresh meat in			
retail cuts	12	15	16
bulk	8	5	4
Numbers buying meat at			
supermarket	15	18	17
butcher	4	3	7
other	1	3	0
Frequency of freezing fresh meat			
Never	1	4	4
Often	11	5	10
Always	8	11	6
Frequency of serving			
PORK/wk.			
0	3	4	3
<2	11	11	10
2-5	6	5	7
>5	0	0	0
BEEF/wk.			
0	0	0	0
<2	1	1	0
2-5	13	18	17
>5	6	1	3
LAMB/wk.			
0	12	15	13
<2	8	5	7
2-5	0	0	0
>5	0	0	0
POULTRY/wk.			
0	1	0	0
<2	18	16	16
2-5	1	4	4
>5	0	0	0



### Discussion of Construct Development Survey

The responses from the construct development surveys were representative of each socioeconomic group (based on the income, education and occupation classification by Kupfer, 1967), and many demographic types (based on family size, age of the household members, nationality and occupation). These respondents also represented widely varying meat consumption habits (See Tables 3a, 3b and 3c).

An average of approximately five constructs was obtained from each respondent. This was below the expected number of constructs. Normally, 18 constructs may be expected (Frost and Braine, 1967), however these authors noted that for food items fewer constructs might be obtained.

The sampling for the construct development survey was designed to provide a range of relevant constructs, without indicating their significance in consumer attitudes. As a result, the relative importance of each construct was not evaluated. However, denotative constructs, constructs peculiar to individuals and complex constructs expressing two or more ideas, were excluded from the semantic differential rating scales, as recommended by Frost and Braine (1967) and Mindak (1965).

### Pretesting of the Semantic Differential Survey

The 14 constructs (see Table 2) that appeared to express single ideas were developed into rating scales for pretesting in the semantic differential survey. In addition, a rating scale for acceptability of supermarket packaging was added. The survey was pretested on randomly



selected respondents, representing the different socioeconomic groups of interest to this study. A total of 21 pretest interviews was carried out.

1. Results. The pretests indicated that some of the constructs required modification. The constructs relating to "suitability for large groups", "popularity", "suitability for meal-in-a-dish", and "versatility of left overs" were interpreted inconsistently by respondents. Difficulty was experienced in understanding the respondents' interpretation of the "tenderness-toughness" construct. The average time required to complete the pretest survey was 45 minutes, with a range of 30 to 60 minutes.

2. Discussion. The "suitability of meats for preparation in large quantities" evoked several ideas, such as "ease" of preparation, expense, and suitability for guests. Furthermore, respondents had different concepts of "large". As a result, respondents were inconsistent in their interpretation of this construct, and it was omitted from the final survey.

The "popularity" construct questioned the general acceptability of the meats. However, after pretesting, it was felt that replacing this construct by "would likely buy" versus "wouldn't likely buy" would give more useful information. It would give a measure of acceptability which would provide a reference point for the significance of the other constructs.

"Suitability of meats for making a meal-in-a-dish" resulted in a wide range of interpretations. This was viewed as the addition of vegetables to the meat. As a result, this construct was interpreted as





increasing the nutritive value of a meat dish, decreasing the preparation time of a meal, or decreasing the prestige value of meats. This construct was discarded due to the variability in interpretations.

The idea of "versatility of leftovers" was included in the general "versatility" construct. When questioned separately, this construct became confused with the acceptability of leftovers, the likelihood of leftovers due to poor acceptability of the original meat, and the housewife's cooking ability. There seemed to be limited concern for, or thought given to, leftovers. If respondents considered this concept, they tended to incorporate it into their rating of general "versatility".

The "tenderness-toughness" construct appeared to have different meanings for researchers and respondents. When researchers refer to tenderness, it is generally in relation to raw meat. Researchers view the method of cooking as a consequence of the recognized "tenderness" of the raw muscle. The respondents, on the other hand, did not seem to relate method of cooking to tenderness, but rather related tenderness to their cooking ability. When questioned about cooking methods or tenderness therefore, respondents were often indicating something different to their evaluation of the tenderness of the meats.

Tenderness is one of the most important quality factors in meat. Despite the difficulties with interpretation this construct was retained in the semantic differential survey. However, it was modified to read "less tender meats" versus "very tender meats." This avoided the use of the word "tough", which respondents seemed reluctant to apply to any meat.



Frost and Braine (1967) noted that one of the advantages of the repertory grid-semantic differential combinations was the freedom to introduce additional constructs of particular interest to the study. The specific interests of the project were considered in writing the final semantic differential survey. In addition to the "tenderness" construct, one relating to the acceptability of meat packaging was incorporated.

The modifications to the semantic differential study reduced its length, so that it could be completed by the respondents in approximately 30 minutes. Although some semantic differential studies were reported to be longer, the respondents in these longer studies were usually college students (Heise, 1970). Homemakers represent a different type of respondent. They are not experienced at completing questionnaires and may find it difficult to respond reliably to scales which are as lengthy, or as comprehensive, as those which college students are able to complete.

For the same reasons, the widely used 7 point scales were reduced to a 5 point scale for this study. Differentiation across 7 points is not only more difficult for the respondent but also requires a much larger sample. The longer scales often have to be condensed for analysis, because respondents do not consistently use the full scale (Matthews, 1971, personal communication).

Many of the constructs that were retained in the final survey were reworded. Heise (1970) reported that better differentiation by, and cooperation of, respondents was achieved when modifying phrases were used to clarify the meanings of scales. This appeared to be beneficial in the case of this survey. The pretesting assured that the



interpretations of the modified constructs were consistent, both between respondents and between interviewer and respondent. Table 4 shows the constructs used on the final semantic differential survey.

Some of the names of meats and cuts were changed from those on the construct development cards to make them more specific, and to eliminate variations in interpretation. "Ham or Picnic" was changed to "Ham"; "Bacon" was changed to "Bacon (side)"; and "Liver" was specified as "Beef Liver". "Veal roast" and "Veal Cutlet" were discarded because of the limited association that the respondents had with these cuts of meat.

All of the other questions on the semantic differential survey were closely scrutinized in view of the results of the pretests. The wording and form of some of the questions were modified to make them more easily understood or to make the responses more meaningful.



Table 4. Constructs used on final semantic differential survey.

Construct Number	<u>Expression of the Construct</u>	
1	Expensive meat.....	Inexpensive meat
2	Less tender meats.....	Very tender meats
3	You wouldn't likely buy.....	You would likely buy
4	Fatty.....	Lean
5	Requires long cooking or preparation.....	Can be quickly prepared (could use when short of time)
6	Meats of low food value.....	Nutritious meats (high food value)
7	Contain much waste such as bone and excess fat.....	Contain little waste
8	Not versatile (limited number of ways to cook).....	Versatile (can be cooked many different ways)
9	Wouldn't serve to special guests (if all meats cost the same price).....	Would serve to special guests (if all meats cost the same price)
10	Not satisfactorily packaged in supermarkets.....	Meats whose packaging in supermarkets is good
11	Used more often in summer (picnics, camping barbecuing).....	Used more often in winter
12	More suitable for lunch or breakfast than for a main meal.....	More suitable for a main meal





## MATERIALS AND METHODS

Sampling

Sampling theory states that sample size is not related to population size when the population is large (Mahatoo, 1968). Thus as long as the sampling method is the same and unbiased, the same sample size can be used in cities of differing population size.

The basis of most nominal and ordinal statistics is the contingency table. This is a crosstabulation or frequency distribution of responses along two or more classificatory variables. Statistical tests of significance and measures of association are based on the distribution of responses in the contingency table cells. Sample size should be related to the number of variables to be crosstabulated i.e. the number of cells in the contingency table (Matthews, 1969). When the variability of factors being measured is not known, the minimum sample size can be calculated to allow a minimum number of probable responses per cell. The minimum number recommended varies from 5 (Ferber, 1949) to 10 (Matthews, 1969), however, Matthews (personal communication, 1971) suggested that 6 theoretical responses per cell should be sufficient.

The independent variables in this study were city, socioeconomic group, and factors of attitude (constructs). The dependent variables were the 5 possible ratings on the semantic differential scales. In each of the 3 study cities, Calgary, Edmonton, and Vancouver, the sample was stratified on the basis of 3 socioeconomic groups. Allowing the possibility for 6 responses per cell in the contingency table, the



required sample size for each city was: 3 (socioeconomic groups) x 5 (ratings) x 6 (responses/cell) x 12 (constructs) = 1080. Since it is often necessary to reduce the 5 point semantic differential scale to 3 points, for analysis (Matthews, 1971), the required sample size can be reduced by assuming a 3 point scale. The required sample size was thus reduced to  $3 \times 3 \times 6 \times 12 = 648$  households per city.

To facilitate interviewing, cluster sampling (Ferber, 1949) was used in preference to simple, random sampling. It was decided that clusters of 6 samples would provide sufficient samples for 2 interviewers to work together in an area, without wasting time. Furthermore, clusters of 6 samples enabled interviewers to complete their work in one area in a few hours, as recommended by Matthews (personal communication, 1971).

The 1971 census tracts for Calgary, Edmonton and Vancouver were classified into low, medium and high socioeconomic areas, based on studies by Kupfer (1967), Ossenberg (1967) and Bell (1965). To meet the requirements for sample size, 36 clusters were required in each socioeconomic group of each city (9 extra clusters were drawn in each socioeconomic group). These 45 census tracts were drawn at random, however as there were insufficient numbers of census tracts to complete the sample for some socioeconomic groups in some cities, census tracts were subdivided where necessary.

A convenient unit or sampling area was the city block. Sample areas were selected at random by applying a grid to city maps, delineating blocks. Blocks which were drawn and did not contain sufficient households because the area was agricultural, industrial, or currently



being developed were discarded and the grid was replaced on the census tract and another block chosen.

The households for the cluster sample in each block were also selected at random. Households, as defined by the 1961 Canadian census (Ossenberg, 1967), were located on large scale city maps of Calgary and Vancouver. In Edmonton, zoning maps were used to differentiate between types of dwellings. Maps from the Edmonton City Planning Division, showing lots on a block, were used to choose the households in areas of single family dwellings. Clusters which were in areas zoned as other than single family, were visited and the households were counted. Households on a block were numbered from the lower right hand corner on maps or from the south east corner of a block. Apartments with numbering systems were numbered in order of apartment number. Unnumbered households in multiple dwellings were numbered from top floor to bottom floor, left to right side of hallways, and back to front of buildings. Eight households were chosen in each cluster to allow for the two-thirds response rate which has been found in other studies in Edmonton and Calgary (Matthews, 1971, personal communication).

### Questionnaire

The questionnaire is shown in Appendix C (pp. 192-209). Each questionnaire was coded with a 5 digit number identifying the city, socioeconomic group, cluster and sample number. The date of the interview, the interviewer's identification number and the address and telephone number of the respondent were also recorded on each survey.

The first section of the questionnaire contained questions on



the demographic characteristics and meat usage patterns of the household. The 12 constructs selected from the pretest survey formed the major portion of the questionnaire. Each construct was presented on a separate page so that the meat cuts were rated for one construct at a time. This arrangement limits the occurrence of a halo effect in the results i.e. the tendency for meat cuts which rank favourably on one construct to rank favourably on succeeding constructs (Levy and Dugan, 1956). The constructs were written with the negative pole on the left hand side of the page.

The construct pages were arranged in 12 different randomized arrangements as shown in Table 5. Approximately equal numbers of questionnaires were collated with each of these 12 arrangements. On each construct page, the meat cuts were arranged in one of the 6 different randomized orders shown in Table 6. Equal numbers of each of these 6 arrangements were printed for each construct, and they were randomly included in the questionnaires. The construct order of each survey and the meat order of each page were coded for identification.

### Interviewing

The interviews were conducted by 8 trained female interviewers, who were students in Household Economics. The interviewers assisted in the pretesting of the survey and were trained in surveying techniques. A handbook was compiled as a reference for the questionnaire. Details of each question's meaning and the methods to be used to complete the survey were included. The completed surveys were carefully checked to ensure that no mistakes had been made. If mistakes were detected, the





Table 5. Randomized orders of the constructs used in the questionnaire.<sup>1</sup>

Page	<u>Arrangement</u>											
	1	2	3	4	5	6	7	8	9	10	11	12
1	5	10	7	9	8	12	9	7	8	4	5	3
2	3	8	11	3	10	3	12	5	11	9	7	6
3	7	5	1	8	12	2	6	6	10	3	3	2
4	6	4	9	5	11	10	10	8	2	12	11	10
5	1	11	2	2	5	7	2	2	9	5	8	11
6	9	6	5	4	6	6	11	1	7	11	2	9
7	4	3	6	11	4	9	4	12	6	10	6	7
8	2	7	3	1	3	8	3	11	5	2	9	5
9	11	12	12	10	9	4	5	9	1	7	12	12
10	8	1	4	7	7	11	8	4	4	8	10	4
11	10	2	10	12	2	1	7	10	12	1	4	1
12	12	9	8	6	1	5	1	3	3	6	1	8

<sup>1</sup>The constructs are referred to by the numbers used in Table 4.



Table 6. Randomized orders of meat cuts used on the questionnaire.<sup>1</sup>

Position on page	<u>Arrangement</u>					
	1	2	3	4	5	6
1	10	13	2	10	6	1
2	20	18	17	1	19	16
3	4	8	16	7	9	7
4	14	11	18	6	18	17
5	11	5	4	9	7	20
6	3	19	9	3	4	19
7	19	6	11	2	5	13
8	15	1	15	11	1	18
9	1	12	5	14	16	2
10	18	20	13	17	8	4
11	2	7	3	8	20	10
12	9	10	7	20	15	11
13	12	4	10	13	14	6
14	8	2	20	16	2	3
15	13	15	6	12	3	9
16	16	9	8	19	17	12
17	7	16	12	5	10	15
18	5	17	19	15	13	8
19	6	14	1	4	12	14
20	17	3	14	18	11	5

<sup>1</sup>The meat cuts are referred to by the semantic differential numbers used in Table 1.



interviewers returned to the respondent without delay to complete the survey.

The interviewers worked in pairs, with one interviewer working permanently in each city, and the remaining 5 interviewers rotating between all cities. The interviewing was co-ordinated by the researcher, who was always available to answer questions by telephone, and visited each of the centres at least once a month during the four-month survey period.

Each interviewer had copies of a letter of introduction explaining the purpose of the survey, and a letter of permission to conduct the survey from the city authorities. Upon entering a cluster, the interviewers approached the households in order of sample numbers, from 1 to 8. Samples 7 and 8 were only approached if one of the first 6 samples refused to do the survey or was not at home after the third call. Reasons for refusals were recorded. Completed surveys and clusters were recorded in a field book, and on a master chart, to facilitate organization of travelling and to ensure that approximately equal numbers of samples from each socioeconomic group were completed. Interviews were done during the day and the evenings to ensure contact with respondents who were unavailable at certain times of the day. If a respondent was not at home on the first call, succeeding calls were made at different times of the day.

The eligible respondent was the person who cooked most of the meat in each household. If the eligible respondent was not available at the time of a call, the interviewer made arrangements to call back at a time when the respondent would be available.



The first section of the survey was completed by the interviewer. She read the questions and choices of answers to the respondent and recorded the respondent's answers. The interviewer then read the instructions on page 3 of the survey (see Appendix C, p. 194) to the respondent and answered any questions, so that the respondent had a clear understanding of the procedure to be followed. Respondents were encouraged to complete the semantic differentials quickly, to obtain their first response to each question. They were also encouraged to ask about constructs if they did not understand them, and to add any comments. The respondents also completed the last two pages of the survey.

The interviewers checked the surveys before leaving a household to see that no questions or pages had been omitted. If errors or omissions were found, the respondent was asked to correct and complete them. Only completed surveys were accepted for analysis.

### Analyses

The responses on the completed surveys were coded, key punched onto IBM data cards, and transferred to computer tape. Frequency distributions were calculated for the socioeconomic variables (education, occupation, and income). Based on this information, the respondents were reclassified into three socioeconomic groups, according to the system shown in Table 7.

Frequency distributions, means and median scores were determined for each meat cut, for each construct on the survey. Response frequency distribution profiles were drawn using the





Table 7. Income, occupation and education groups used in the socio-economic reclassification system of respondents.

Socioeconomic Group	Income	Occupation	Education
Low	< \$7,000	- Unskilled - Unemployed - Retired	- No technical, vocational, or apprenticeship training
Medium	\$7,000 - \$9,999	- Skilled - Retired	- Completed technical, vocational, or apprenticeship training
High	> \$10,000	- Professional - Management - Retired	- No specifications



frequency distribution data. Meat image profiles were drawn using the mean scores from the frequency distribution data. The meats were categorized for each construct on the basis of the median scores.

The semantic differential responses were subsequently collapsed to 3 categories: response categories 1 and 2 were combined; category 3 was unchanged; and categories 4 and 5 were combined.

The FASTABS program from the Statistical Package for the Social Sciences (Nie, Bent and Hull, 1970) was used to obtain chi-square tests for independence. Analyses were carried out to test for independence of the data from interviewer and question arrangement effects. The effects of city, socioeconomic group and age of respondent on the data were measured using the same program. Comparisons which generated contingency tables with 20 percent or more cells having fewer than 5 responses, or a cell with zero response, were discarded, because of the unreliability of chi-square values from such contingency tables (Siegel, 1956).

To determine interviewer effect, city and socioeconomic group were controlled, so that only those interviewers who had completed sufficient numbers of surveys in a particular socioeconomic group, within a city, to provide reliable cell frequencies were included in the analyses. As a result it was not possible to compare all interviewers directly with one another.

Correlation coefficients were calculated between the "would buy" construct and the other 11 constructs. The PEARSON CORR program from Statistical Package for the Social Science (Nie et al., 1970) was used. The 3 constructs which were significantly correlated with "would buy"



for all 20 meat cuts, i.e. "tenderness", "nutrition", and "would serve to special guests", were also correlated with each of the other 11 constructs.



## RESULTS

### Survey distribution

The 1469 surveys completed in this study were distributed between the 3 cities, as follows:

Calgary	497
Edmonton	487
Vancouver	485

The distribution of these surveys by socioeconomic group, based on the classification of the census tracts used in the sampling, is shown in Table 8. The sampling was designed to give approximately equal numbers of households surveyed within each socioeconomic group. The percentage of each socioeconomic group interviewed ranged from 30 to 36 percent. However this socioeconomic classification, from the census tracts, was only intended as a sampling guide.

The incidence of, and reasons for refusals, reported in Table 9, were based on these socioeconomic groupings. There were 232 refusals, of which 52 percent occurred in Vancouver. The most frequent reason for refusing to complete the survey was a lack of interest. This was the main reason given by potential respondents in the low socioeconomic areas, who refused to answer the survey. Language problems were also experienced more frequently in the low socioeconomic areas.

The sampling was designed so that after 2 re-calls, the interviewer rejected that household and replaced it with another sampled household in that cluster. The numbers of potential survey households discarded as "not at home" are also shown in Table 9. The





Table 8. Distribution of completed surveys based on socioeconomic groups used in sampling.

City	Socioeconomic group	Number of completed surveys	Percentage of city total
<u>Calgary</u>	Low	150	30
	Medium	172	34
	High	175	36
	Total	<u>497</u>	
<u>Edmonton</u>	Low	151	31
	Medium	173	36
	High	163	33
	Total	<u>487</u>	
<u>Vancouver</u>	Low	160	33
	Medium	158	32
	High	167	35
	Total	<u>485</u>	



Table 9. Reasons for refusals classified by socioeconomic groups used in sampling and city.

Reason	<u>CALGARY</u>			<u>EDMONTON</u>			<u>VANCOUVER</u>		
	L	M	H	L	M	H	L	M	H
Language	6	1	1	12	4	1	9	1	2
Vegetarians	0	1	1	5	0	1	2	3	4
Poor health	0	0	1	0	1	0	3	1	1
Inebriated	0	0	0	1	0	0	1	0	0
Dislike surveys	1	2	2	2	0	0	1	0	2
Distrust	0	0	0	0	3	0	2	0	1
No time	2	2	3	2	5	1	1	3	2
Not interested	11	2	4	13	4	3	52	4	10
Slammed door	3	2	1	5	2	1	3	2	1
Wouldn't answer door	0	0	0	0	0	0	3	6	0
Sub totals	23	10	13	40	19	7	77	20	23
Total refusals by city	46			66			120		
"Not at Home"	20	21	9	37	40	36	34	74	77
Refusals plus "not at homes" by city	50			113			185		



greatest number, 53 percent, were in Vancouver. The difficulties experienced in Vancouver are reflected by the completed cluster sample data shown in Table 10. Of the 102 clusters started in Calgary, 57 percent were completed; in Edmonton, 48 percent of 93 clusters were completed; while in Vancouver, only 23 percent of 122 clusters were completed. The overall return rates, on the basis of 8 possible samples per cluster were: Calgary 61 percent, Edmonton 65 percent, and Vancouver 50 percent.

The percentage of respondents in each occupation and income category for each city, are shown in Table 11. The distributions, for both occupation and income, between cities, were similar. The skilled and unskilled occupation group was the largest in each city. Compared to the other cities, Edmonton had a greater percentage of households in which the main wage earner's occupation was professional, while in Vancouver this group was relatively low. In Calgary, the management group was larger than in the other cities. In Vancouver, the "retired, unemployed and student" group was relatively large. In general, the distribution of income groups interviewed in each city was similar. However, the \$7,000 - 9,000 category was relatively large in Vancouver.

The reclassification of the respondents based on income, occupation and education was carried out according to the classification system in Table 7 (p. 51). The distribution of the surveyed households between socioeconomic groups, in each city, resulting from this reclassification is shown in Table 12. The surveys were no longer evenly distributed between socioeconomic groups within cities. The low socioeconomic group accounts for 31-39 percent of the sample; the medium socioeconomic group for 42-49 percent; and the high socioeconomic



Table 10. Numbers of clusters sampled and degree of completion,  
classified by city and socioeconomic group.

City/Degree of completion	Socioeconomic ranking of cluster areas		
	<u>Low</u>	<u>Medium</u>	<u>High</u>
<u>Calgary</u>			
Complete	19	19	20
5 samples	2	2	3
4 samples	4	9	6
<4 samples	5	6	7
<u>Edmonton</u>			
Complete	18	18	19
5 samples	2	4	6
4 samples	2	5	1
<4 samples	9	4	5
<u>Vancouver</u>			
Complete	9	10	9
5 samples	6	8	8
4 samples	10	12	11
<4 samples	17	11	11





Table 11. Classification of respondent's household by occupation and income groups.

Main Wage Earner's Occupation	City			
	<u>Calgary</u> (%)	<u>Edmonton</u> (%)	<u>Vancouver</u> (%)	<u>Total</u> (%)
Professional	12.7	14.4	11.1	12.7
Management	16.3	12.1	11.5	13.3
Skilled and unskilled	56.9	57.5	57.3	57.2
Retired, unemployed, or student	14.1	16.0	20.0	16.7
Family <u>Income (\$)</u>	(%)	(%)	(%)	(%)
<3,000	8.9	10.5	12.8	10.7
3,000 - 4,999	7.8	9.9	13.0	10.2
5,000 - 6,999	15.7	17.2	15.3	16.1
7,000 - 9,999	32.6	27.1	27.6	29.1
10,000 - 15,000	24.1	23.8	21.6	23.2
>15,000	10.9	11.5	9.7	10.7



Table 12. Distribution of completed surveys in the reclassified socioeconomic groups, calculated from income, occupation and education data.

City	Socioeconomic group	Number of surveys completed	Percentage of city total
<u>Calgary</u>	Low	154	31
	Medium	241	49
	High	102	20
	<u>Total</u>	<u>497</u>	
<u>Edmonton</u>	Low	173	36
	Medium	213	43
	High	101	20
	<u>Total</u>	<u>487</u>	
<u>Vancouver</u>	Low	186	39
	Medium	212	42
	High	87	19
	<u>Total</u>	<u>485</u>	



group for only 19-20 percent. All further calculations are based on the reclassified socioeconomic status of the respondents.

### Demographic Characteristics of the Sample

The data included information about household size, age of the respondents, female employment outside of the home and ethnicity. These data have been calculated as frequency distributions and are given in Tables 13-16.

The information about household size, by city and socioeconomic group, shown in Table 13, indicated that the distributions between cities are quite similar, except that the single person households in Vancouver represented a larger proportion of respondents in that city than in either Calgary or Edmonton. Similarly, the medium socioeconomic group in Calgary and Edmonton had larger percentages in 4 and 5 person families, while the equivalent in Vancouver referred to 3 and 4 person families. The distribution of family sizes between socioeconomic groups, within cities varied considerably. The family size of low socioeconomic groups in all 3 cities were smaller than either the medium or high socioeconomic groups.

The distribution of respondents by age categories is shown in Table 14. The distribution of these age categories within socioeconomic groups, between cities was similar, except for the low socioeconomic group in Vancouver, which had a relatively low percentage of respondents 36-55 years of age and a high percentage of respondents over 65 years.

The employment of females outside the home is reported by city



Table 13. Household sizes in each socioeconomic group in each city.

City/Household size	Socioeconomic group		
	Low (%)	Medium (%)	High (%)
<u>Calgary</u>			
Single person	11.7	0.8	0.0
2 people	31.8	14.1	14.7
3	15.6	17.8	13.7
4	18.2	29.0	35.3
5	13.0	23.7	23.5
6	7.1	8.7	6.9
> 6	2.6	5.9	5.9
<u>Edmonton</u>			
Single person	10.4	0.5	0.0
2	32.9	14.6	12.9
3	15.0	15.5	19.8
4	16.8	28.2	30.7
5	9.2	23.5	16.8
6	8.1	10.8	10.9
> 6	7.6	6.9	8.9
<u>Vancouver</u>			
Single person	19.4	2.4	3.4
2	34.4	17.9	12.6
3	12.4	24.1	18.4
4	12.9	25.5	34.5
5	8.6	16.0	12.6
6	5.9	6.1	10.3
> 6	6.4	8.0	8.2





Table 14. Age category of respondents in each socioeconomic group in each city.

City/Age of respondent		Socioeconomic group		
		Low (%)	Medium (%)	High (%)
<u>Calgary</u>				
Under 25 years		17.5	9.1	6.9
25 - 35		15.6	34.4	31.4
36 - 55		31.2	45.6	55.9
56 - 65		16.2	8.3	5.9
>65		19.5	2.5	0.0
<u>Edmonton</u>				
Under 25 years		13.9	16.4	3.0
25 - 35		12.1	30.0	27.7
36 - 55		38.7	44.6	58.4
56 - 65		15.6	8.5	6.9
>65		19.7	0.5	4.0
<u>Vancouver</u>				
Under 25 years		17.2	12.7	10.3
25 - 35		16.7	25.5	33.3
36 - 55		24.7	50.5	49.4
56 - 65		13.4	9.4	4.6
>65		28.0	1.9	2.3



and socioeconomic group in Table 15. Care was taken in the planning of the interviewing not to exclude respondents who worked during the day. Within socioeconomic groups, between cities, there was considerable similarity in the distributions, except that the low socioeconomic group in Vancouver had a relatively large percentage of females who were employed full time. In general, there were more females employed part- and full time in the medium and high socioeconomic groups. More than 60 percent of the females in each group were not employed outside the home.

The distribution of respondents by place of birth is shown in Table 16. The majority of the respondents in each category (city, socioeconomic group) were born in Canada. In Vancouver a large percentage (21.5) of the respondents in the low socioeconomic group were from the United Kingdom. The percentage of Canadian born respondents was lower in the low socioeconomic group, than in any other socioeconomic group. While United Kingdom and Northern European people predominated in the minor ethnic groups for the respondents interviewed in all 3 cities, in Calgary there was an increased number of respondents born in the United States of America, compared to Edmonton and Vancouver.

Although the distributions for these demographic characteristics were generally similar between cities, differences between socioeconomic groups were quite noticeable. Most differences between cities were noted for the respondents in Vancouver.

### Meat Usage Patterns

The respondents were asked questions about meat buying, usage



Table 15. Employment of females in each socioeconomic group in each city.

City/employment	Socioeconomic group		
	Low (%)	Medium (%)	High (%)
<u>Calgary</u>			
not employed	77.9	66.8	69.6
part-time	10.4	10.8	10.8
full-time	11.7	22.4	19.6
<u>Edmonton</u>			
not employed	79.2	61.5	66.3
part-time	11.0	19.2	14.9
full-time	9.8	18.8	18.8
<u>Vancouver</u>			
not employed	69.4	62.3	69.0
part-time	11.3	17.5	9.2
full-time	19.4	20.3	21.8



Table 16. Classification of respondents by place of birth, for each socioeconomic group in each city.

City/place of birth	Socioeconomic group		
	Low (%)	Medium (%)	High (%)
<u>Calgary</u>			
Canada	66.2	73.0	71.6
United Kingdom	9.7	9.5	6.9
Northern Europe	6.4	10.3	4.0
Southern Europe	5.2	0.8	2.0
Eastern Europe	5.2	1.7	2.0
U.S.A.	6.5	4.6	10.8
Asia	0.6	0.0	1.0
Other	0.0	0.0	2.0
<u>Edmonton</u>			
Canada	68.2	80.3	73.3
United Kingdom	9.8	6.1	6.9
Northern Europe	11.6	9.4	4.0
Southern Europe	1.2	0.5	1.0
Eastern Europe	6.4	2.3	4.0
U.S.A.	1.7	0.9	6.9
Asia	1.2	0.5	2.0
Other	0.0	0.0	2.0
<u>Vancouver</u>			
Canada	51.6	69.8	75.9
United Kingdom	21.5	12.3	11.5
Northern Europe	12.4	8.0	3.4
Southern Europe	7.5	3.3	1.1
Eastern Europe	1.6	1.9	0.0
U.S.A.	3.8	2.4	3.4
Asia	1.1	1.9	3.4
Other	0.5	0.5	1.1





in the home and eating outside the home. The data are summarized in Tables 17 - 21. The frequencies of buying beef as retail cuts, or in bulk, are shown in Table 17. While there were marked similarities between the percentage of the respondents buying retail cuts and in bulk, in Calgary and Edmonton, Vancouver respondents tended to buy in bulk less often, except for the high socioeconomic group. In Calgary and Edmonton, the main group buying in bulk was the medium socioeconomic group, while in Vancouver the main group buying in bulk was the high socioeconomic group.

The distribution of respondents buying meat at butcher shops and supermarkets, by socioeconomic group and city, is shown in Table 18. The supermarket was the main source of meat purchasing in all 3 cities, however, the percentage of respondents buying meat at butcher shops was consistently higher for all three socioeconomic groups in Vancouver. In Calgary and Edmonton, the low socioeconomic groups purchased meat less frequently from butcher shops, and in Calgary, in particular, there was a large percentage of meat from "other" sources, such as: farmers, wholesale sources, hunting etc.

The weekly frequency of serving beef in the home is shown in Table 19. The median category in each city and for each socioeconomic group was "3 - 5 times per week", with Calgary having more respondents who served beef "more than 5 times per week" than any other city. Socioeconomic grouping had a marked effect on the frequency of serving beef. There was a greater percentage of low socioeconomic respondents serving beef "occasionally" (0 - 2 times per week), than in other



Table 17. Form of meat purchases in each socioeconomic group in each city.

City/Form of purchases		Socioeconomic group		
		<u>Low</u> (%)	<u>Medium</u> (%)	<u>High</u> (%)
<u>Calgary</u>				
	Bulk	17.5	36.5	27.5
	Retail Cuts	82.5	63.5	71.6 (1)
<u>Edmonton</u>				
	Bulk	17.9	34.7	16.8
	Retail Cuts	82.1	65.3	83.2
<u>Vancouver</u>				
	Bulk	13.4	19.3	25.3
	Retail Cuts	86.0	80.2	74.7

(1) The remaining 1.0% is accounted for by one respondent who did not buy beef.



Table 18. Source of meat purchases in each socioeconomic group in each city.

City/Source of purchase	Socioeconomic group		
	<u>Low</u> (%)	<u>Medium</u> (%)	<u>High</u> (%)
<u>Calgary</u>			
Butcher shop	5.2	11.6	7.8
Supermarket	86.4	66.6	79.5
Other	8.4	22.8	12.7
<u>Edmonton</u>			
Butcher shop	7.5	16.4	12.9
Supermarket	80.8	79.6	82.1
Other	11.7	14.0	5.0
<u>Vancouver</u>			
Butcher shop	28.5	28.8	29.9
Supermarket	66.7	62.8	62.2
Other	4.8	8.4	7.9



Table 19. Frequency of beef consumption by each socioeconomic group in each city.

City/Frequency of consumption per week	Socioeconomic group		
	Low (%)	Medium (%)	High (%)
<u>Calgary</u>			
never (0)	0.0	0.0	0.0
occasionally (0-2)	20.8	11.2	10.8
frequently (3-5)	62.3	76.3	73.5
most of the time (>5)	16.9	12.4	15.7
<u>Edmonton</u>			
never (0)	1.2	0.0	0.0
occasionally (0-2)	26.0	17.8	9.9
frequently (3-5)	63.6	74.2	80.2
most of the time (>5)	9.2	7.5	9.9
<u>Vancouver</u>			
never (0)	0.5	0.5	0.0
occasionally (0-2)	32.8	19.8	11.5
frequently (2-5)	63.4	71.7	79.3
most of the time (>5)	3.2	8.0	9.2





socioeconomic groups.

The data also revealed that the median group for pork consumption was "0 - 2 times per week", with more people from the low socioeconomic groups serving pork less often than medium and high socioeconomic groups. No city differences were noted for frequency of pork consumption. The frequency of consumption of poultry had the same median as pork (0 - 2 times per week), but the low socioeconomic group tended to eat poultry more often than the medium and high socioeconomic groups. For lamb, the median was 0 times per week, but there was a higher incidence of lamb consumption in Vancouver, lowest in Edmonton. In all 3 cities, lamb was eaten more often by high socioeconomic groups than others, however in Vancouver the low socioeconomic group had a relatively high incidence of lamb consumption. Other meats also have a median of 0 times per week, although about 20-30 percent in all cities and socioeconomic groups used other meats occasionally (0 - 2 times per week).

The order of selection of meats for consumption in the home by the low socioeconomic groups in Edmonton and Vancouver was: 1. beef, 2. poultry, 3. pork, 4. lamb. All other socioeconomic groups, including the low socioeconomic group in Calgary, selected: 1. beef, 2. pork, 3. poultry, 4. lamb. The order of selection of meats in restaurants was questioned. Table 20 gives the data for dining (fine food and family) restaurants, Table 21 gives similar data for take-out restaurants. For the dining restaurants, the order of choice was: 1. beef, 2. poultry, 3. fish, 4. pork, 5. lamb. For the take-out restaurants in Vancouver, the order was the same as for the dining



Table 20. Percentage of respondents by order of selection of meat types at dining restaurants.

Meat type	Order of Choices	Calgary (%)	Edmonton (%)	Vancouver (%)
Beef	1st	79.9	72.9	67.4
	2nd	14.7	18.3	21.6
	3rd	3.4	6.6	7.6
	4th	1.4	2.1	1.9
	5th	0.4	0.2	0.6
Pork	1st	4.2	5.5	3.7
	2nd	14.7	16.6	12.8
	3rd	28.6	25.5	20.8
	4th	42.7	41.3	44.5
	5th	9.7	11.1	17.3
Poultry	1st	7.0	10.7	12.6
	2nd	47.7	43.1	40.0
	3rd	29.8	32.2	30.9
	4th	13.5	11.9	12.4
	5th	1.8	2.1	3.3
Lamb	1st	1.0	0.8	1.2
	2nd	2.4	1.6	4.5
	3rd	6.0	4.5	7.6
	4th	10.3	10.9	16.1
	5th	80.1	82.1	69.7
Fish	1st	7.6	10.1	14.2
	2nd	20.3	20.3	20.2
	3rd	32.0	31.2	32.2
	4th	32.0	33.9	24.3
	5th	7.8	4.5	8.2



Table 21. Percentage of respondents by order of selection of meat types at take-out restaurants.

Meat Type	Order of Choices	Calgary (%)	Edmonton (%)	Vancouver (%)
Beef	1st	40.8	34.5	39.2
	2nd	28.6	38.8	29.1
	3rd	20.7	17.7	19.4
	4th	6.2	3.7	4.3
	5th	0.6	0.0	0.2
Pork	1st	6.0	4.5	4.3
	2nd	11.5	11.7	9.9
	3rd	26.0	18.9	14.8
	4th	47.1	55.9	52.8
	5th	6.2	3.7	10.3
Poultry	1st	43.7	48.9	38.8
	2nd	32.2	27.9	25.8
	3rd	15.9	12.1	20.8
	4th	4.8	4.9	5.6
	5th	0.4	0.8	1.2
Lamb	1st	0.0	0.4	0.0
	2nd	0.4	0.2	0.6
	3rd	2.2	1.4	3.1
	4th	8.7	5.1	13.2
	5th	85.5	87.5	75.3
Fish	1st	6.4	6.6	9.9
	2nd	24.3	16.0	26.8
	3rd	32.2	44.4	34.0
	4th	29.6	25.1	16.3
	5th	4.2	2.7	5.2



restaurants, but in Calgary and Edmonton the order of choice was:

1. Poultry, 2. beef, 3. fish, 4. pork, 5. lamb. Whereas beef was clearly the first choice when eating out at dining restaurants, the selection of beef in preference to poultry at take-out restaurants in Vancouver was far less marked. Similarly, the difference in the incidence of selecting poultry and beef at take-out restaurants in Calgary and Edmonton was small. In all cases, lamb was by far the lowest choice, and pork had a low selection rating for meals eaten out of the home. The rank order for fish in the home was not determined, however for eating out of the home it was rated as the third choice at both dining and take-out restaurants.

Associated with this study of the rank order of selecting meat types at restaurants, was a question on the frequency of buying prepared foods out of the home, with and without children. As would be expected, there was a greater incidence of eating out at dining restaurants by high socioeconomic groups than by the low socioeconomic groups, and a greater incidence of eating out without children, except for the Calgary medium socioeconomic group, which had a higher incidence of eating out with children. Conversely, food from take-out restaurants was associated with family eating. Although only 25 - 30 percent of respondents in the low socioeconomic groups recorded eating food from take-out restaurants with their children, 40 - 50 percent of respondents in the medium and high socioeconomic groups recorded eating food from take-out restaurants with their children.

For the respondents in these samples, therefore, the purchasing of retail meat cuts was the predominant method of meat purchasing,





however there were differences in the frequency of bulk meat purchases between socioeconomic groups and cities. Similarly, the supermarket was the principal source of meat, although there were marked differences between cities, and except for Vancouver, there were differences between socioeconomic groups. Beef was the principal meat consumed by these respondents, more by the high than the low socioeconomic groups. The low socioeconomic groups tended to eat poultry as a replacement for beef, except in Calgary where pork seemed to be preferred to poultry. In all cases, the median usage level for beef was "frequent usage" (3 - 5 times per week) while median usage levels for pork and poultry were "occasional usage" (0 - 2 times per week). The order of choice of meat types in the home and at dining restaurants was similar, with some differences between the order of pork and poultry, but beef was always the highest and lamb the lowest choice. For take-out restaurants, poultry was frequently selected as the first choice, however both beef and poultry were selected as the first choice with almost the same frequency.

#### Meat Attitude Patterns

1. Response frequency distribution patterns. The frequency distributions for the scores of the beef cuts, on each construct, are shown in Figures 2 - 10. The distribution of the data is shown for all 5 response categories. The patterns vary considerably between meat cuts and between constructs. For example, oven beef roast and broiling steak (Figures 2 and 5) were generally unidirectional, indicating that the respondents had consistent attitudes toward these cuts. Furthermore,



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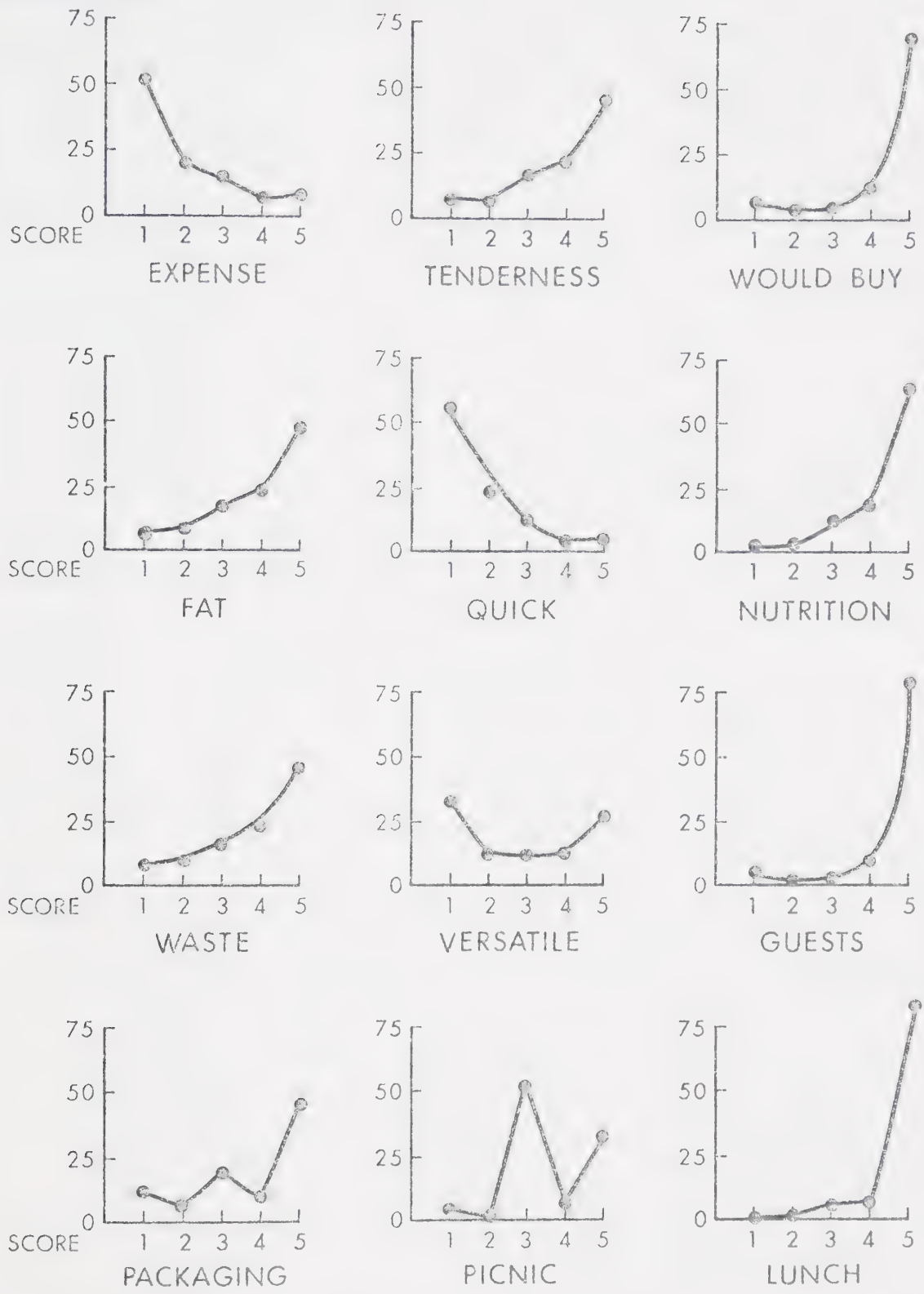


Figure 2. Response frequency distribution patterns for oven beef roast.



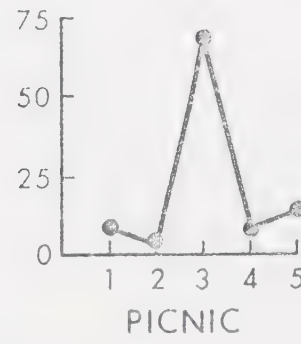
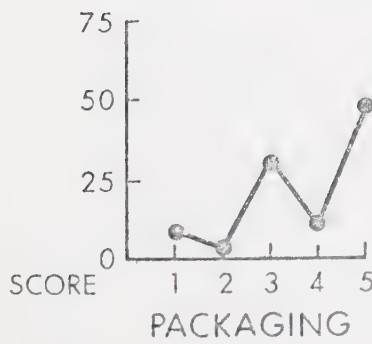
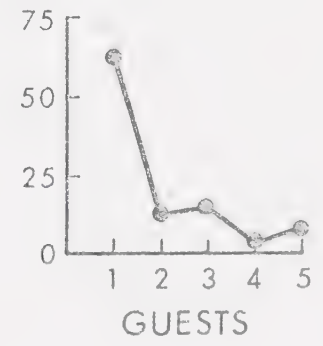
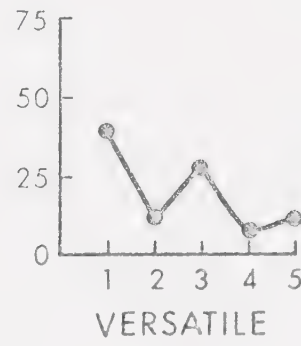
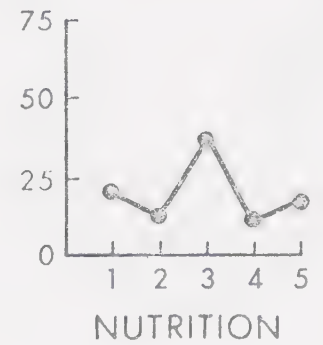
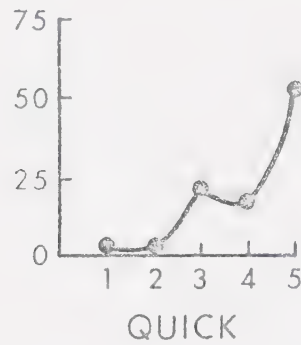
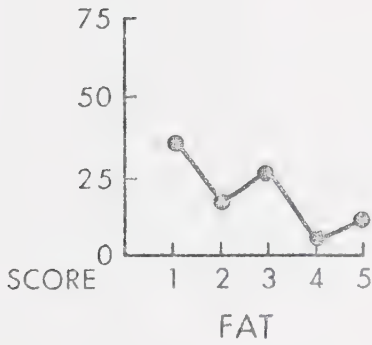
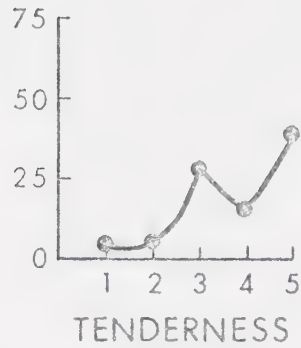
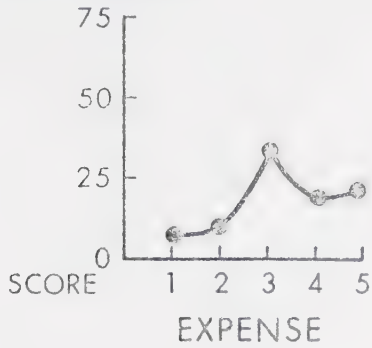
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Figure 3. Response frequency distribution patterns for fresh beef sausage.



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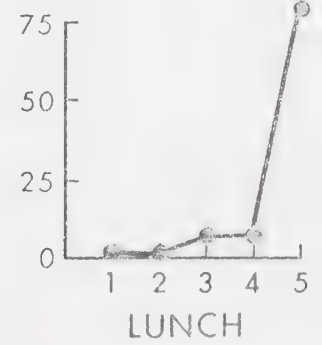
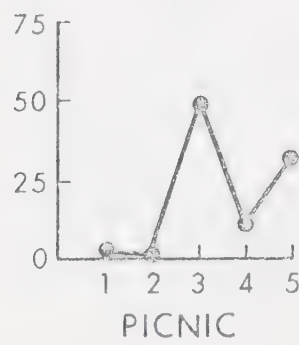
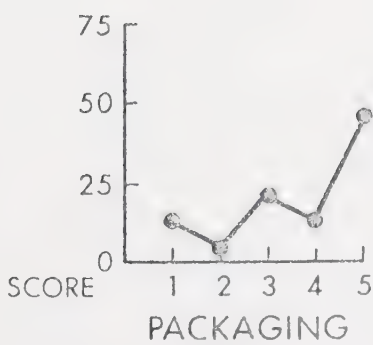
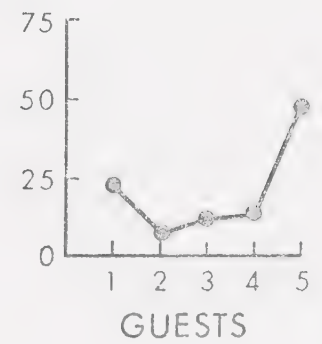
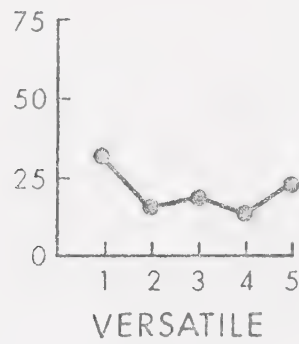
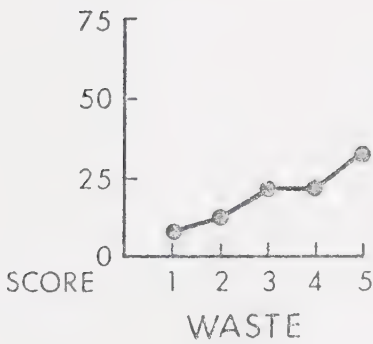
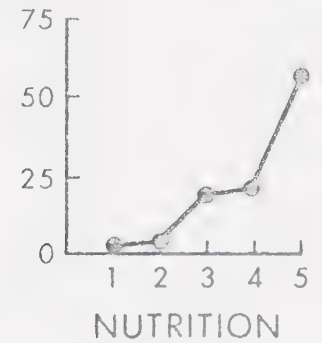
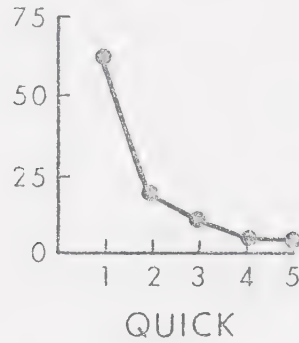
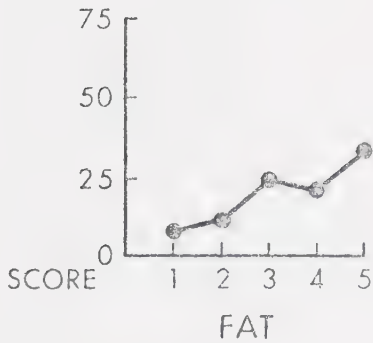
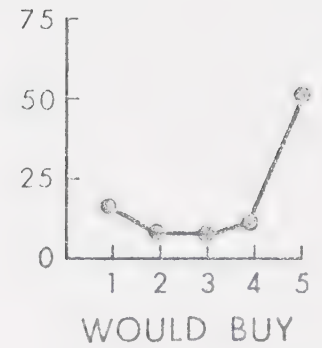
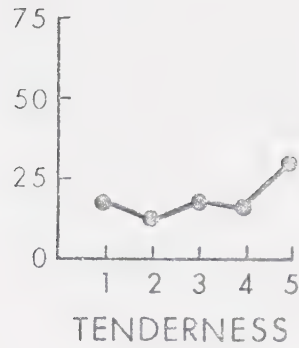
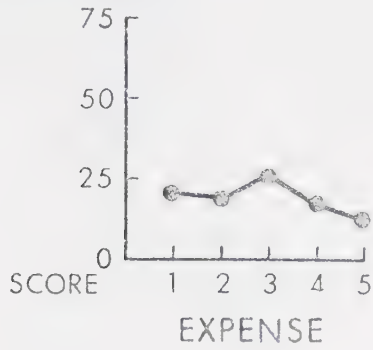


Figure 4. Response frequency distribution patterns for pot roast.





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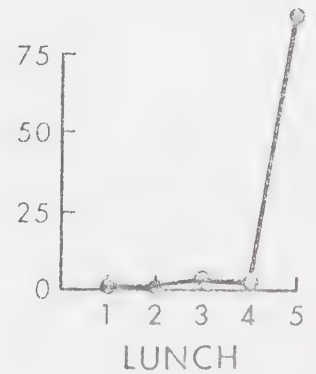
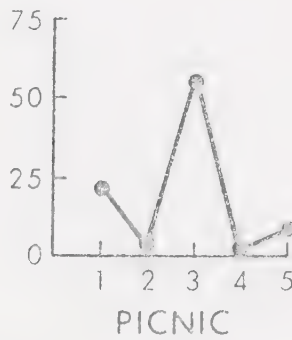
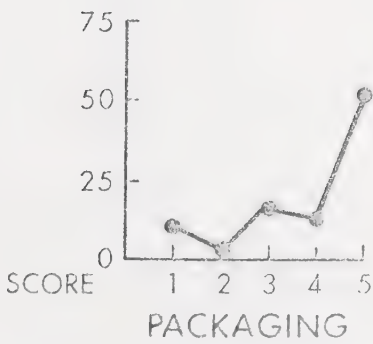
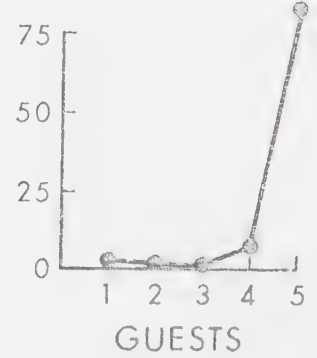
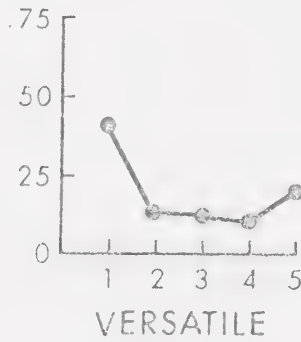
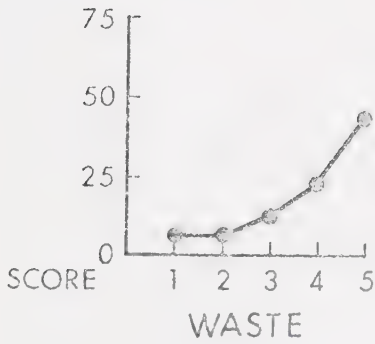
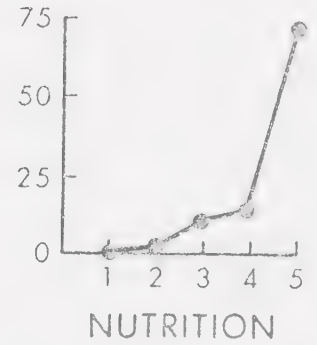
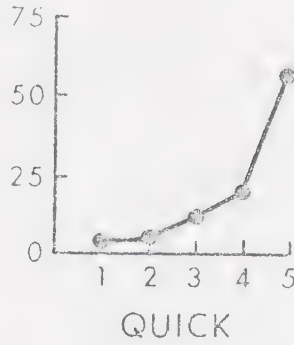
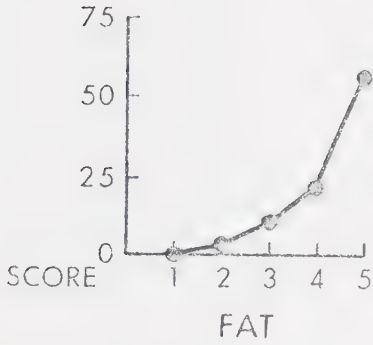
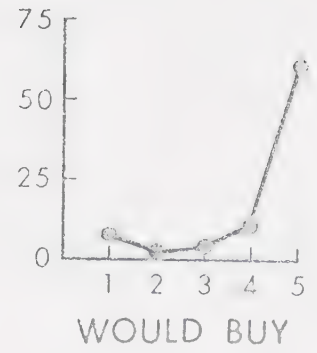
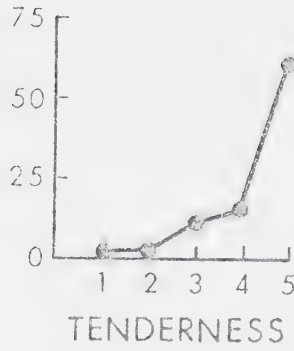
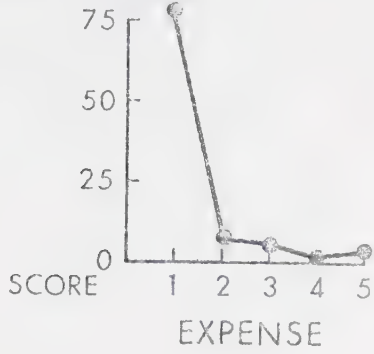


Figure 5. Response frequency distribution patterns for broiling steaks.



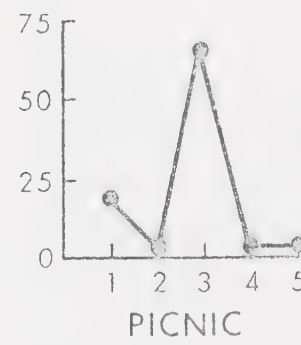
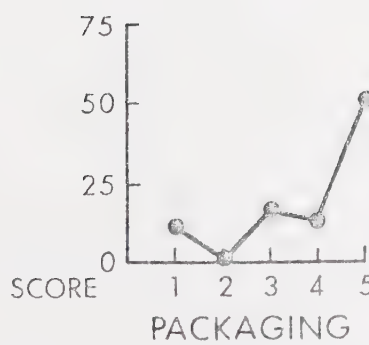
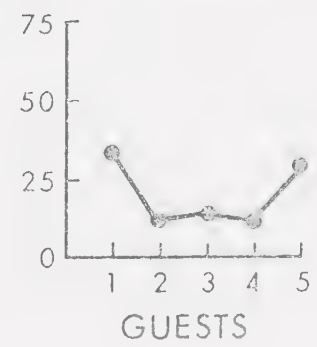
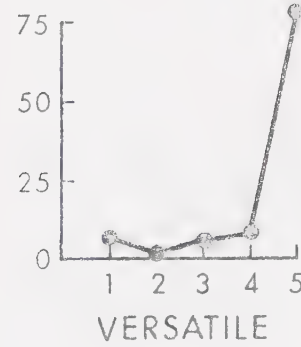
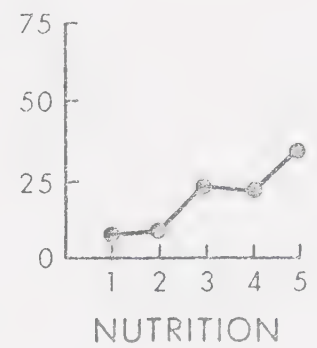
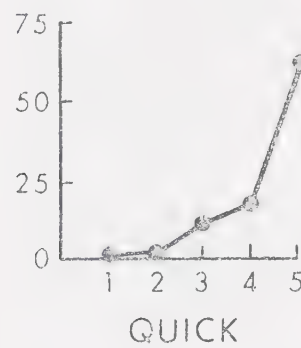
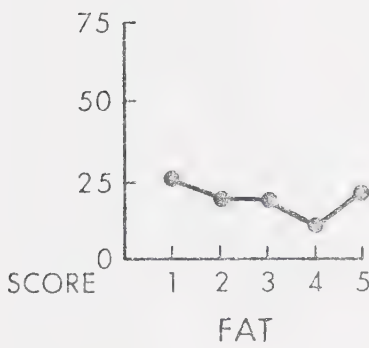
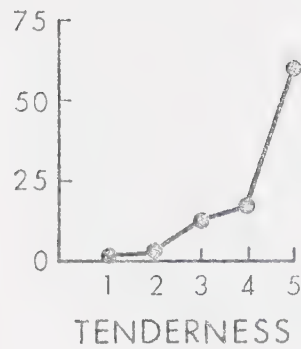
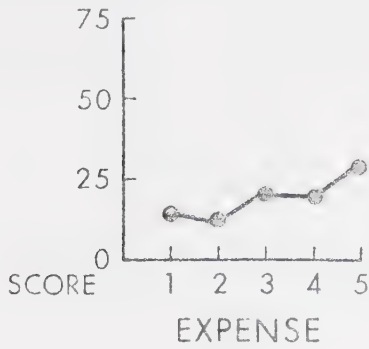
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Figure 6. Response frequency distribution patterns for ground beef.



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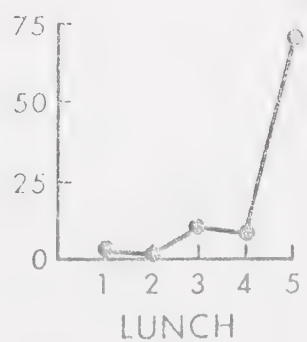
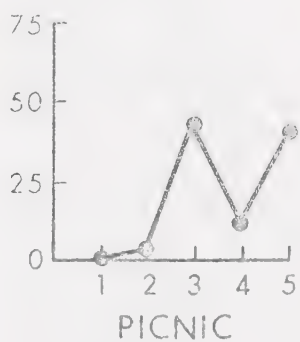
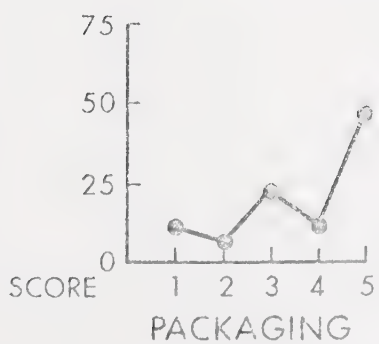
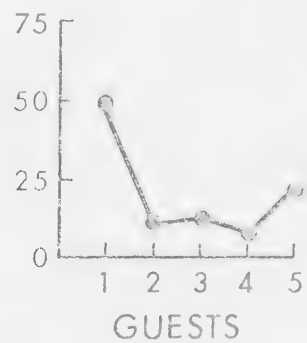
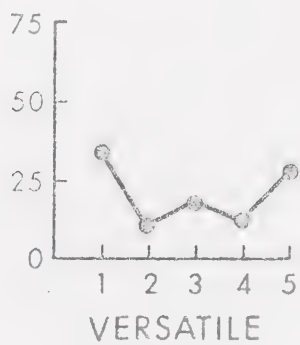
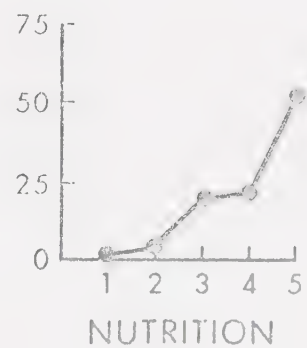
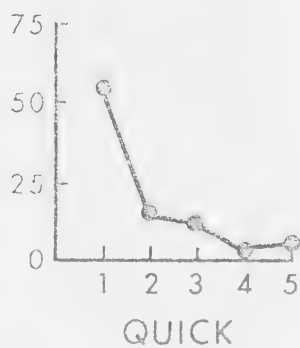
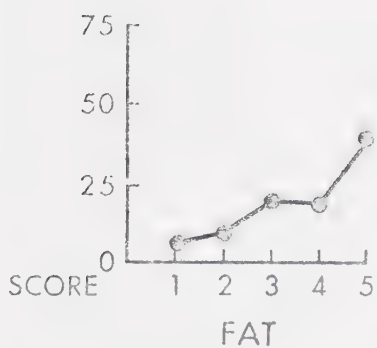
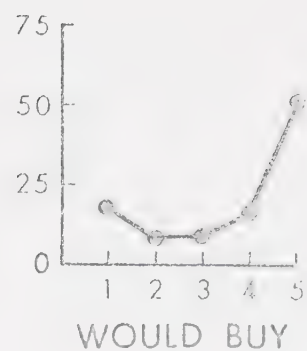
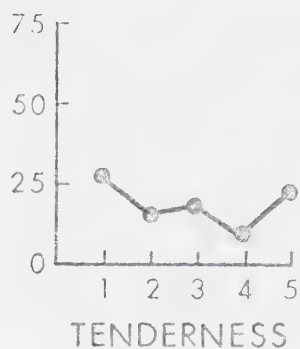
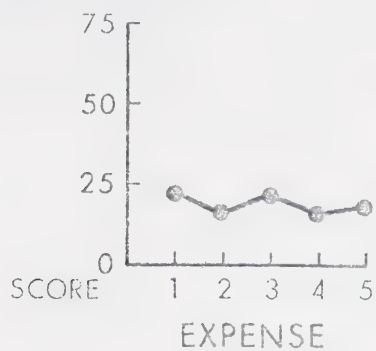


Figure 7. Response frequency distribution patterns for stew beef.



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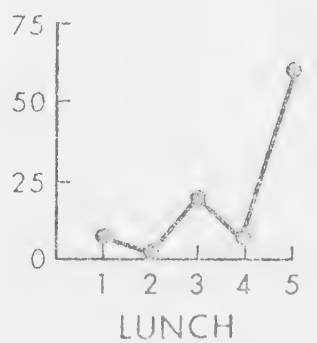
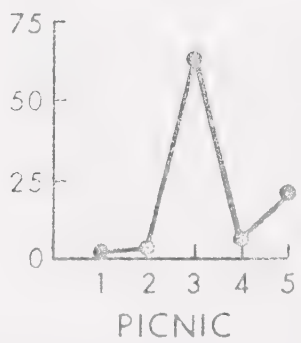
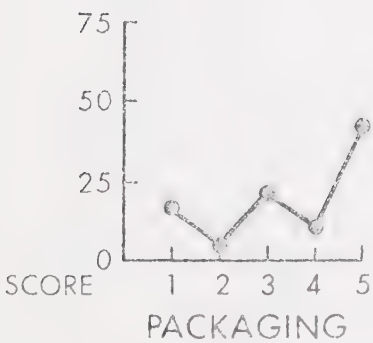
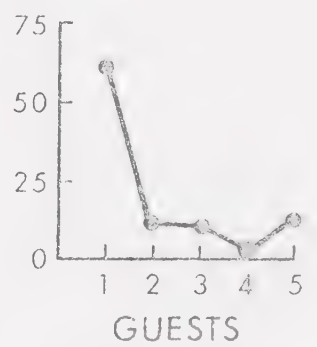
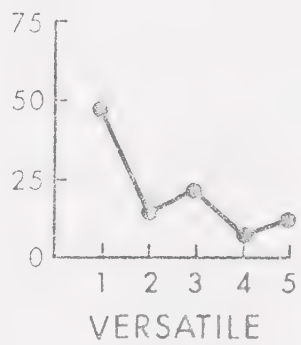
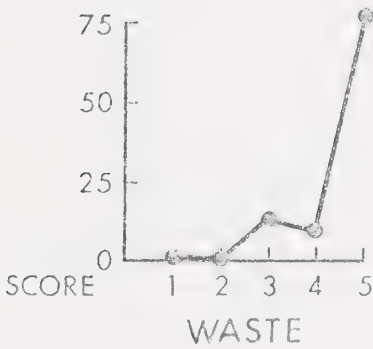
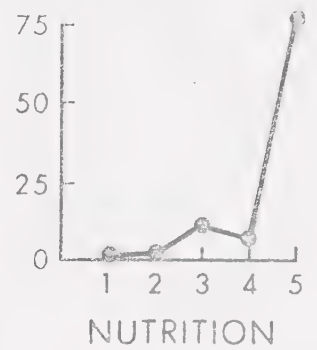
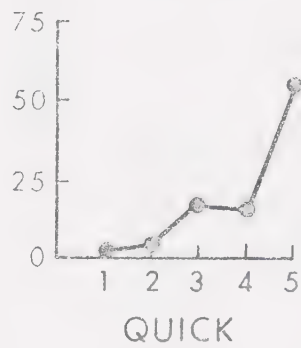
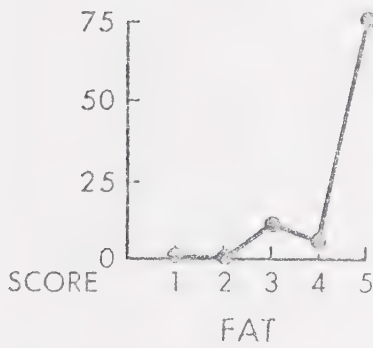
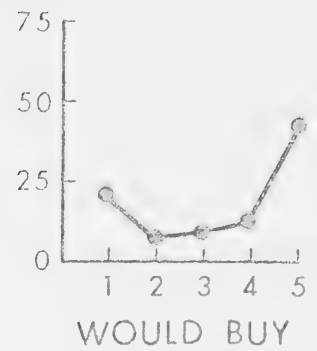
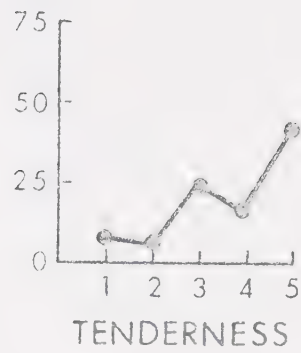
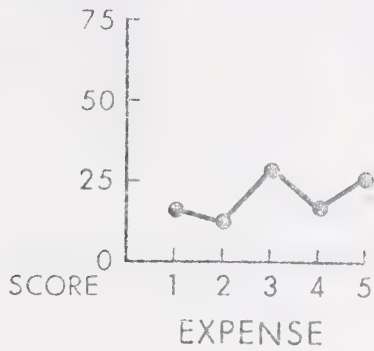


Figure 8. Response frequency distribution patterns for liver (beef).





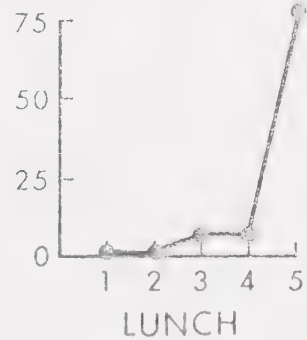
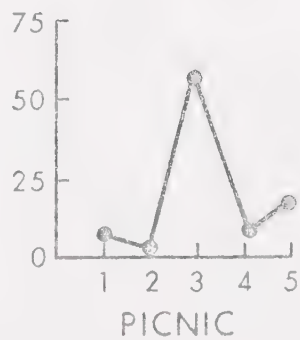
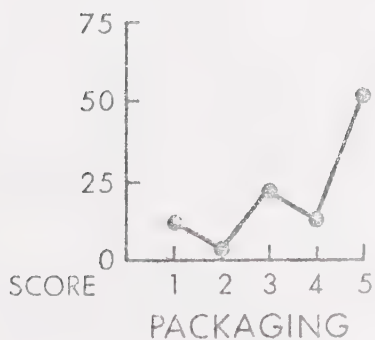
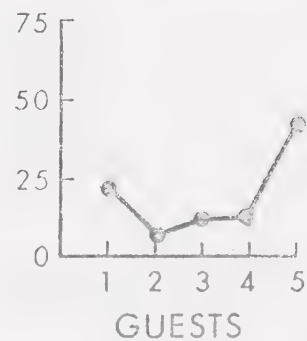
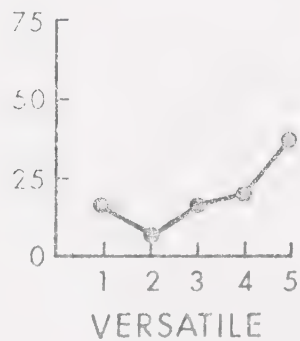
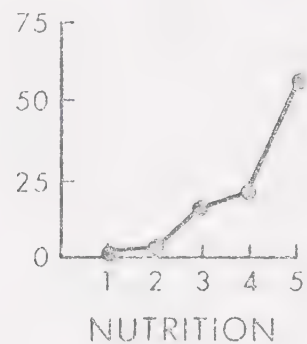
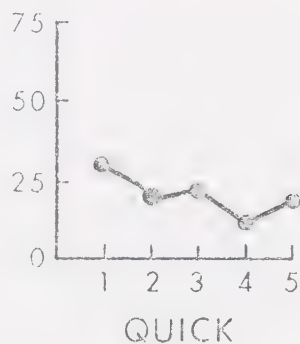
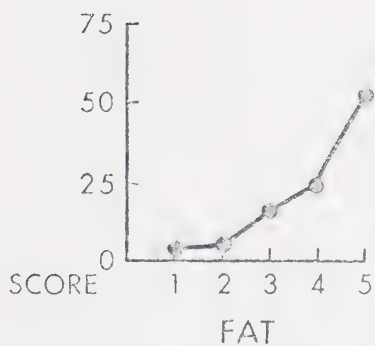
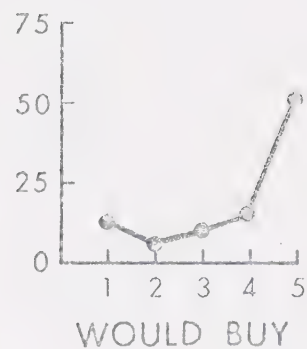
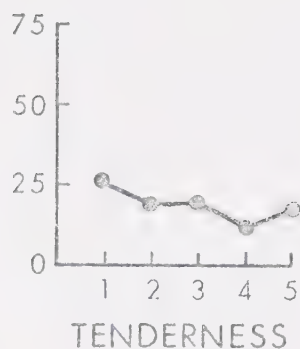
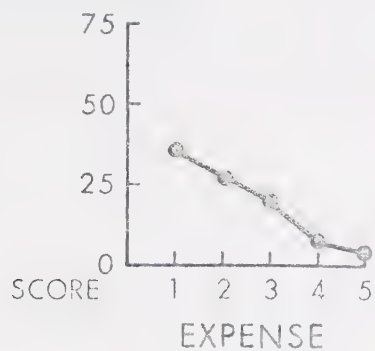


Figure 9. Response frequency distribution patterns for round steak.



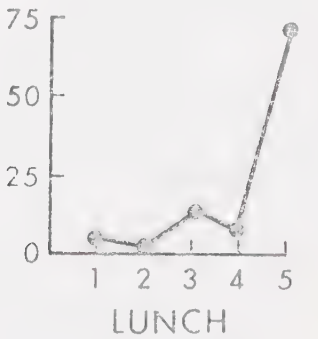
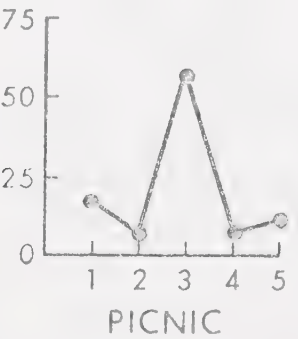
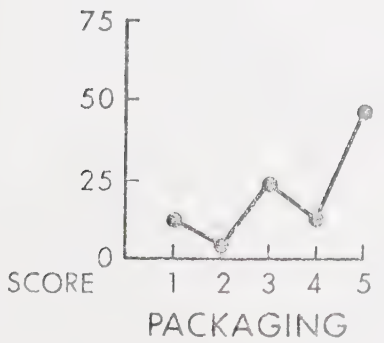
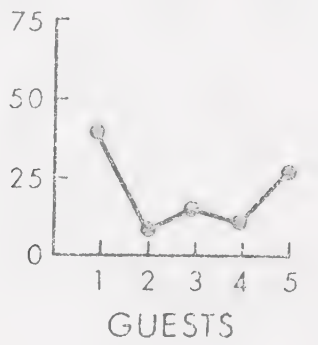
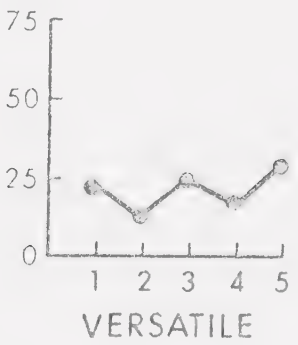
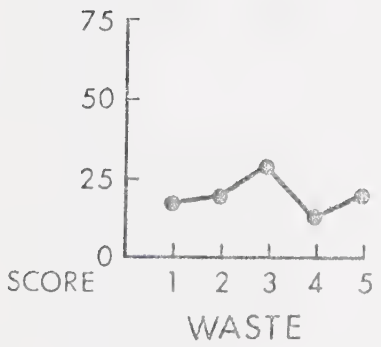
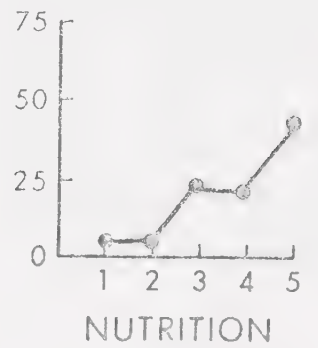
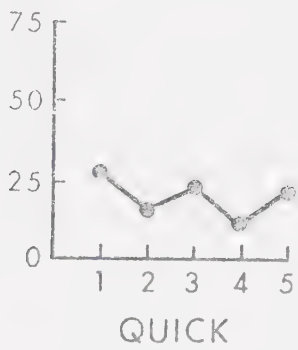
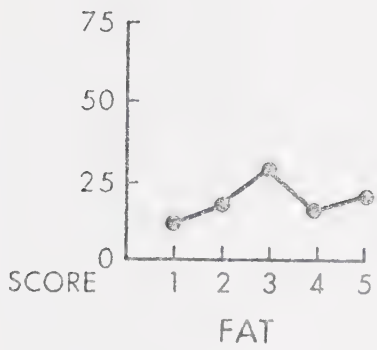
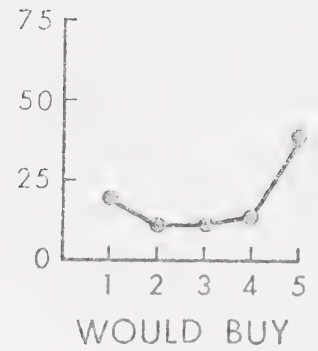
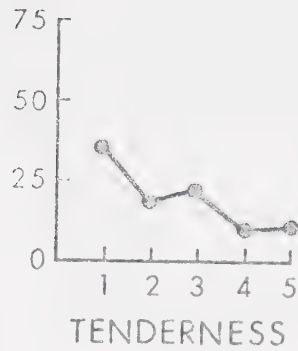
PERCENT OF  
RESPONDENTS

Figure 10. Response frequency distribution patterns for chuck steak.



the small "no opinion" category indicated that definite opinions prevailed. In contrast, the response distribution patterns for chuck steak and fresh beef sausage (Figures 3 and 10) indicated conflicting and less definite opinions. There were generally large "no opinion" categories, and categories 1 and 5 were often of equivalent size.

Categories 2 and 4 were used infrequently.

Between constructs, the "picnic" and "packaging" constructs had a large "no opinion" category. However, the "special guests" construct indicated that respondents had definite opinions about serving the specific beef cuts to special guests. Only chuck steak had a distinctive "no opinion" category with regard to its suitability for serving to guests.

2. Meat image patterns. The image profiles for each meat or meat cut are shown in Appendix D (p. 210 to p. 230). These profiles were based on the mean total score for each meat cut. The constructs were listed in the image profiles in the order of their frequency of correlation with the "would buy" construct (see p. 88). Hence, the constructs were arranged in order of their importance to acceptability (decision to buy). Arbitrary mean score limits of 2.0 and 4.0 were drawn on the image patterns, to indicate strong reactions for each meat cut. The outstanding features of a meat cut were judged as those that had mean scores less than 2.0 or greater than 4.0. The outstanding features for each meat cut are shown in Table 22. The + signs indicated a mean score  $>4.0$ , and in general indicated a favourable reaction for the construct, except for the "picnic" and "lunch" constructs, which did not have favourable and unfavourable poles. The poles of these constructs









indicated different uses for the meat, whereas the central area (score  $\approx$  3.0) indicated variable usage of the meat. The - signs indicated a mean score  $<2.0$ , and with the same limitations for the "picnic" and "lunch" constructs, indicated an unfavourable reaction for the construct.

For beef cuts there were 21 favourable scores and 6 unfavourable scores out of a possible 90 scores. For the fresh and cured pork cuts there were 5 favourable, 3 unfavourable scores out of a possible 50 scores. While for poultry (chicken and turkey) there were 11 favourable, 1 unfavourable scores out of a possible 20 scores. A total of 7 out of 9 beef cuts were considered more suitable for dinner than lunch, only ground beef and beef sausage lacked polarity and might be rated as suitable for both lunch and dinner type meals. For the pork cuts, 2 out of 5 were considered more suitable for dinner, 1 out of 5 more suitable for lunch, while pork sausage and ham were rated as suitable for both. Both poultry types were rated as suitable for dinner usage.

There were marked similarities in the image patterns for certain meats or meat cuts. These may be seen from the patterns in Appendix D, or from the summary given in Table 22. In judging the similarity of the image patterns, the ranking of the constructs, from important to less important in these figures, should be noted. For example, the images for both sausage types were very similar; pork roast and pork chops were very similar, except for the "quick" construct and to a lesser extent the "versatility" construct. Chicken and turkey differed mainly in the time required for preparation; turkey and oven beef roast were similar, except for packaging and expense; chicken and steak were similar, except for the less important constructs, such as time for



preparation, versatility and expense.

3. Acceptability of meat cuts. To study the relationship of the beef cuts with other meats, the results for all meat cuts included in the survey were considered. The "would buy" construct was intended to measure the acceptability of the meats and meat cuts. The correlation of other construct data with the "would buy" construct indicated the relationship between acceptability and each factor of attitude. The correlation coefficients for the beef cut data are shown in Table 23. The data for other meats and meat cuts are shown in Table 24.

The "tenderness", "nutrition" and "guest" constructs were significantly correlated with the "would buy" construct for all 20 meat cuts tested. The "packaging" construct was significantly correlated for 19 out of the 20 meat cuts, and the "fat" and "waste" constructs were each significantly correlated for 18 out of the 20 meat cuts. These represented the most important factors in meat acceptability. The "lunch" and "quick" constructs were significantly correlated for 16 and 15 of the meat cuts, respectively; while the "versatile", "expense" and "picnic" constructs were only significantly correlated for 13, 12 and 11 of the meat cuts, respectively. The low number of significant correlations between the "expense" and the "would buy" constructs did not indicate that price was not a determining factor in meat buying behaviour but rather that price was not related to acceptability. The "would buy" construct was not intended to measure what respondents "do buy". This information is available from market statistics.



Table 23. Correlation coefficients of "Would Buy" with other constructs for beef cuts.

Construct Codes	beef cuts								
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak	chuck steak
Expense	-.039	+.052*	-.064**	+.017	+.022	+.036	+.006	-.050*	-.004
Tenderness	+.136***	+.232***	+.172***	+.181***	+.166***	+.167***	+.306***	+.132***	+.129***
Fat	+.147***	+.113***	+.190***	+.126***	+.101***	+.204***	+.282***	+.149***	+.182***
Quick	-.043	+.119***	-.041	+.160***	+.145***	-.033	+.222***	+.066**	+.129***
Nutrition	+.146***	+.147***	+.192***	+.155**	+.132***	+.192***	+.169**	+.171***	+.226***
Waste	+.091***	+.143***	+.151***	+.168***	+.125***	+.228***	+.325***	+.152***	+.185***
Versatile	+.015	+.056*	+.082***	+.028	+.121***	+.023	-.030	+.121***	+.134***
Guests	+.244***	+.209***	+.364***	+.191***	+.162***	+.196***	+.160***	+.278***	+.360***
Packaging	+.046*	+.154***	+.054*	+.062**	+.119***	+.118***	+.081***	+.099***	+.152***
Picnic	+.026	+.048*	+.027	-.053*	+.013	+.090***	+.055*	+.019	-.062**
Lunch	+.120***	+.142***	+.184***	+.127***	+.068**	+.164***	+.195***	+.187***	+.252***

\* significance at the 5% level

\*\* significance at the 1% level

\*\*\* significance at the 0.1% level



Table 24. Correlation coefficients of "Would Buy" with other constructs for meat and meat cuts other than beef.

Con- struct Codes	Meat or meat cut										
	turkey	chicken	pork sausage	pork chops	pork roast	bacon (side)	ham	cold cuts	wieners	lamb chops	lamb roast
Expense	+.091***	+.057*	+.070**	-.043	+.027	+.091***	+.059*	+.057*	+.053*	-.195***	-.179***
Order- ness	+.175***	+.120***	+.218***	+.124***	+.203***	+.151***	+.147***	+.175**	+.181***	+.281***	+.370***
Int	+.114***	+.102***	+.076**	+.091***	+.067**	+.016	+.060*	+.181***	+.186***	-.004	+.115***
Quick	-.015	-.0003	+.140***	+.120***	-.082**	+.096***	+.055*	+.268***	+.266***	+.215***	-.218***
Nutri- tion	+.134***	+.105***	+.143***	+.225***	+.268***	+.147***	+.201***	+.193***	+.114***	+.220***	+.247***
Watte	+.088***	+.069**	+.230***	+.104***	+.113***	+.119***	+.119***	+.259***	+.231***	+.032	+.032
Var- satile	+.075**	+.173***	+.017	+.127***	+.070**	+.031	+.101***	+.043*	+.154***	-.074**	-.033
Guests	+.266***	+.211***	+.187***	+.234***	+.427***	+.160***	+.296***	+.241***	+.165***	+.347***	+.425***
Packag- ing	+.122***	+.027	+.156***	+.105***	+.117***	+.120***	+.046*	+.154***	+.133***	+.076**	+.091***
Pieric	-.047*	-.004	-.007	+.031	+.139***	+.020	-.004	-.063**	-.134***	+.102***	+.176***
Lunch	+.112***	+.106***	+.053*	+.192***	+.124***	+.012	+.013	+.020	+.070**	-.005	+.217***

90

\* significance at the 5% level

\*\* significance at the 1% level

\*\*\* significance at the 0.1% level





Considering the correlation coefficients for the beef cuts alone, it was apparent that in addition to "tenderness", "nutrition" and "guests", the constructs for "fat", "waste", "packaging" and "lunch" were always correlated with the "would buy" construct. The factors related to acceptability of beef were very similar to those for all of the meats and meat cuts. But the "lunch" construct was also related to the acceptability of beef. Fat, waste, and packaging influenced the acceptability of all beef cuts.

The median response score for each meat cut was determined from the frequency distribution data. The median score of each meat cut, within each construct, is shown in Appendix E (p. 231 to p. 242). Based on the median scores, for the 6 constructs highly correlated with the "would buy" construct, an "acceptance" score for the meat cuts was calculated. These scores are given in Table 25.

The meat cuts could thus be ranked in order of acceptability. The most highly acceptable meats or meat cuts were steak, turkey and chicken. Also rated as highly acceptable were round steak, oven beef roast and ham. The beef cuts were distributed throughout the ranked order of acceptance. Pot roast, ground beef, stew beef and liver were scored slightly lower than the highly acceptable meats. Beef cuts accounted for 7 out of the 10 meats with the highest acceptance scores. Only chuck steak and beef sausage were on the lower half of the acceptance order. Beef sausage ranked last, with pork sausage, in order of acceptance.



Table 25. Acceptance scores of meat cuts based on the median scores.

Meat cut	Construct					Acceptance Score	
	Tenderness	Nutrition	Guests	Fat	Waste		
oven beef roast	4	5	5	4	4	4	26
fresh beef sausage	4	3	1	2	3	4	17
pot roast	3	5	4	4	4	4	24
broiling steak	5	5	5	5	4	5	29
ground beef	5	4	3	3	4	5	24
stew beef	3	5	2	4	5	4	23
liver(beef)	3	5	1	5	5	4	23
round steak	3	5	4	5	5	5	27
chuck steak	2	4	3	3	3	4	19
turkey	5	5	5	5	4	5	29
chicken	5	5	5	5	4	5	29
fresh pork sausage	4	3	1	1	4	4	17
pork chops	4	4	4	2	3	4	21
pork roast	4	4	5	2	3	4	22
bacon (side)	4	3	3	1	3	4	18
ham	5	4	5	3	4	5	26
cold cuts	5	3	2	3	5	5	23
wieners	5	2	1	3	4	5	20
lamb chops	3	4	2	3	3	3	18
lamb roast	3	4	3	3	3	3	19

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Key: 1 and 2 represented unfavourable scores, 3 represented a no opinion rating, and 4 and 5 represented favourable scores for these constructs.



The constructs which were of importance in the acceptability of the meat cuts were, in turn, correlated with all other constructs. The correlation coefficients for "tenderness" with all other constructs are shown in Tables 26 and 27. In addition to being highly correlated with the "would buy" construct, "tenderness" was also correlated in 20 out of 20 analyses with each of the "nutrition" and "guests" constructs, and 19 out of 20 analyses for the "fat", "waste" and "packaging" constructs.

The "tenderness" construct for beef cuts alone was correlated with the "would buy" (9 out of 9 analyses), "fat" (9/9), "nutrition" (9/9), "waste" (8/9), "guests" (9/9) and "packaging" (8/9). These were the same constructs as those listed above for "all meats".

Both the "versatility" and "picnic" constructs had little relationship with the "tenderness" construct. "Versatility" was only significantly correlated with 5 out of 20 constructs for "all meats", and 2 out of 9 constructs for the beef cuts; similarly, "picnic" was only significantly correlated with 6 out of 20 constructs for all meats, and 3 out of 9 constructs for beef cuts.

Similarly, the correlation coefficients for the "nutrition" construct with all other constructs, are shown in Tables 28 and 29. The "nutrition" construct was highly correlated with "would buy" and "tenderness", and in addition, it was highly correlated with the "fat" (19 out of 20 analyses) "waste" (18/20), "guests" (19/20) and "lunch" (20/20) constructs. The constructs that were important for all meat cuts shown above, were similarly important for the beef cuts.

The correlation coefficients for the "guests" construct



Table 27. Correlation coefficients of "Tenderness" with the other constructs for meats and meat cuts other than beef.

Con- struct Codes	meats and meat cuts										
	turkey	chicken	fresh pork sausage	pork chops	pork roast	bacon (side)	ham	cold cuts	wieners	lamb chops	lamb roast
Expense	+0.097***	+0.071**	+0.052*	+0.014	+0.011	+0.023	+0.027	-.006	+0.063**	-.089***	-.219***
Would Buy	+0.175***	+0.120***	+0.218***	+0.124***	+0.203***	+0.151***	+0.147***	+0.175***	+0.181***	+0.281***	+0.370***
Fat	+0.114***	+0.141***	-.025	+0.117***	+0.058*	+0.048*	+0.081***	+0.155***	+0.174***	+0.081***	+0.168***
Quick	-.040	+0.041	+0.134***	+0.111***	-.068**	+0.096***	+0.055*	+0.167***	+0.168***	+0.159***	-.207***
Nutri- tion	+0.184***	+0.080***	+0.077**	+0.138***	+0.181***	+0.185***	+0.079***	+0.134***	+0.088***	+0.193***	+0.329***
Waste	+0.049*	+0.049*	+0.070**	+0.141***	+0.105***	+0.107***	+0.066**	+0.191***	+0.231***	+0.111***	+0.144***
Ver- satile	+0.006	+0.030	-.030	+0.027	-.029	+0.051*	+0.060*	+0.022	+0.048*	+0.018	-.032
Guests	+0.180***	+0.005	+0.080***	+0.145***	+0.198***	+0.137***	+0.135***	+0.127***	+0.081***	+0.211***	+0.365***
Packag- ing	+0.094***	+0.062**	+0.166***	+0.052*	+0.119***	+0.096***	+0.060*	+0.056*	+0.091***	+0.109***	+0.115***
Picnic	-.014	+0.028	-.009	-.037	+0.070**	-.025	-.002	+0.011	-.043*	+0.012	+0.163***
Lunch	+0.101***	+0.056*	-.0002	+0.073**	+0.131***	+0.018	+0.058*	+0.006	+0.015	+0.108**	+0.236***

\* significance at the 5% level  
 \*\* significance at the 1% level  
 \*\*\* significance at the 0.1% level





Table 28. Correlation coefficients of "Nutrition" with other constructs for beef cuts.

Construct Codes	beef cuts									
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak	chuck steak	
Expense	-.083***	-.030	-.009	-.067***	-.081***	-.069**	+.032	-.097***	-.062**	
Tenderness	+.143***	+.121***	+.030***	+.120***	+.224***	+.063**	+.169***	+.058*	+.067**	
Would Buy	+.146***	+.147***	+.192***	+.155***	+.132***	+.192***	+.169***	+.171***	+.226***	
Fat	+.125***	+.157***	+.129***	+.156***	+.256***	+.181***	+.228***	+.182***	+.215***	
Quick	-.028	+.015	-.107***	+.174***	+.012	-.040	+.147***	+.048*	+.004	
Waste	+.080***	+.139***	+.127***	+.113***	+.226***	+.170***	+.181***	+.200***	+.176***	
Versatile	-.006	+.075**	+.065**	+.068**	-.009	+.046*	-.071	+.131***	+.116***	
Guests	+.102***	+.126***	+.128***	+.171***	+.120***	+.154***	+.002	+.132***	+.177***	
Packaging	+.043	+.062**	+.014	+.056*	+.032	+.024	-.028	+.086***	+.072	
Picnic	+.034	+.033	+.051*	-.075**	+.054*	+.083***	-.077**	+.008	-.051*	
Lunch	+.124***	+.125***	+.159***	+.129***	+.105***	+.149***	+.127***	+.171***	+.194***	

\* significance at the 5% level

\*\* significance at the 1% level

\*\*\* significance at the 0.1% level



Table 29. Correlation coefficients of "Nutrition" with other constructs for meats and meat cuts other than beef.

Con-struct Codes	Meat or meat cuts										
	turkey	chicken	fresh pork sausage	pork chops	pork roast	bacon (side)	ham	cold cuts	wieners	lamb chops	lamb roast
Expense	+0.017	+0.003	+0.031	-0.043	-0.006	+0.024	+0.023	-0.056*	-0.057	-.131***	-.152***
Tender-ness	+0.184***	+0.080***	+0.077**	+0.138***	+0.181***	+0.185***	+0.079***	+0.134***	+0.088***	+0.193***	+0.329***
Would Buy	+0.134***	+0.105***	+0.143***	+0.225***	+0.268***	+0.147***	+0.201***	+0.108***	+0.114***	+0.220***	+0.247***
Fat	+0.114***	+0.091***	+0.141***	+0.118***	+0.132***	+0.175***	+0.135***	+0.175***	+0.205***	+0.030	+0.096***
Quick	-0.044*	+0.031	-0.044*	+0.098***	-0.063**	-0.0008	+0.024	-0.013	-0.067**	+0.170***	-0.234***
Waste	+0.030	+0.032	+0.228***	+0.139***	+0.115***	+0.217***	+0.094***	+0.089***	+0.125***	+0.046*	+0.066**
Vcr-satile	+0.002	+0.131***	+0.043	+0.072**	+0.057*	+0.075***	+0.068**	+0.051*	+0.065**	-0.051*	-0.073**
Guests	+0.154***	+0.091***	+0.159***	+0.163***	+0.290***	+0.172***	+0.147***	+0.180***	+0.117***	+0.220***	+0.265***
Packag-ing	+0.056*	+0.011	+0.031	+0.051*	+0.079***	+0.069**	+0.037	+0.059*	+0.031	+0.148***	+0.151***
Picnic	+0.078***	+0.054*	-0.022	+0.011	+0.075**	-0.029	+0.022	+0.130***	+0.084***	+0.115	+0.173***
Lunch	+0.057*	+0.096***	+0.103***	+0.123***	+0.153***	+0.137***	+0.078***	+0.164***	+0.131***	+0.212***	+0.283***

\* significance at the 5% level  
 \*\* significance at the 1% level  
 \*\*\* significance at the 0.1% level



correlated with all other constructs, are shown in Tables 30 and 31. In addition to the "would buy", "tenderness" and "nutrition" constructs, the "guests" construct was highly correlated with the "fat" (18 out of 20 analyses) construct. For the beef cuts, there was also an important relationship between the "guests" and "expense" construct. The more expensive the cut, the more likely it was considered suitable to serve the cut to "guests".

The correlation coefficients obtained in these calculations were small. Even those that were significant at the 0.1 percent level, did not exceed 0.5.

#### Tests for Independence of the Data

1. Interviewer effect. The initial chi-square tests for independence between interviewers was done on the data for all interviewers, for the first construct and all beef cuts, using the original 5 response categories, and controlled for city and socio-economic group effect. In this data, there were many cells in the contingency tables for chi-square analysis that had a zero cell response frequency or had 20 percent or more of the cells with fewer than 5 responses. This resulted from the unequal distribution of the surveys by interviewers, between cities and socioeconomic groups, and the infrequent use of response categories 2 and 4 by the respondents. As a result, these data could not be used as a reliable test for interviewer effect.

To eliminate the incidence of low cell frequencies in the contingency tables, the semantic differential data was collapsed to a



Table 30. Correlation coefficients of "Would Serve to Special Guests" with the other constructs for beef cuts.

Construct Codes	beef cuts									
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak	chuck steak	
Expense	-.088***	-.093***	-.129***	-.040	-.053*	-.072**	-.049*	-.184***	-.187***	
Tenderness	+.106***	+.063**	+.175***	+.128***	+.100***	+.151***	+.149***	+.273***	+.250***	
Would Buy	+.244***	+.209***	+.364***	+.192***	+.162***	+.196***	+.160***	+.278***	+.360***	
Fat	+.103***	+.115***	+.158***	+.143***	+.091***	+.103***	+.011	+.103***	+.213***	
Quick	-.062**	+.055*	-.022	+.111***	+.072**	+.009	+.020	+.073**	+.100***	
Nutrition	+.102***	+.126***	+.128***	+.171***	+.120***	+.154***	+.002	+.132***	+.177***	
Waste	+.081***	+.133***	+.123***	+.118***	+.068**	+.065**	+.036	+.126***	+.192***	
Versatile	-.032	+.106***	+.094***	+.029	+.030	+.112***	+.126***	+.085***	+.119***	
Packaging	+.028	+.021	+.047*	+.106***	+.006	+.003	+.013	+.046*	+.078***	
Picnic	+.039	-.067**	-.077**	-.088***	+.018	-.096***	-.110***	-.033	-.095***	
Lunch	+.165***	+.074**	+.108***	+.148***	+.092***	+.078***	+.018	+.147***	+.148***	

\* significance at the 5% level

\*\* significance at the 1% level

\*\*\* significance at the 0.1% level





Table 31. Correlation coefficients of "Would Serve to Special Guests" with the other constructs for meats and meat cuts other than beef.

Con- struct Codes	Meats or meat cuts										
	turkey	chicken	fresh pork sausage	pork chops	pork roast	bacon (side)	ham	cold cuts	wieners	lamb chops	lamb roast
Expense	+ .093***	+ .007	- .096***	- .116***	- .038	- .035	+ .017	- .138***	- .057*	- .138***	- .202***
Tender- ness	+ .180***	+ .005	+ .080***	+ .145***	+ .198***	+ .137***	+ .135***	+ .127***	+ .081***	+ .211***	+ .365***
Would Buy	+ .266***	+ .211***	+ .187***	+ .284***	+ .437***	+ .160***	+ .296***	+ .241***	+ .165***	+ .347***	+ .425***
Fat	+ .120***	+ .117***	+ .123***	+ .096***	+ .078***	+ .086***	+ .085***	+ .144***	+ .098***	+ .040	+ .141***
Quick	- .116***	+ .010	+ .003	+ .038	- .113***	+ .047*	- .011	+ .000***	+ .029	+ .130	- .216***
Nutri- tion	+ .154***	+ .091***	+ .159***	+ .163***	+ .290***	+ .172***	+ .147***	+ .180***	+ .117***	+ .219***	+ .265***
Waste	+ .041	+ .048*	+ .107***	+ .122***	+ .114***	+ .038	+ .072**	+ .116***	+ .019	+ .073**	+ .068**
Ver- satile	+ .035	+ .103***	+ .066**	+ .126***	+ .076**	+ .051*	+ .112***	+ .126***	+ .093***	+ .024	- .009
Packag- ing	+ .234***	+ .035	+ .008	+ .047*	+ .114***	+ .036	+ .081***	+ .016	- .029	+ .062**	+ .108***
Picnic	+ .078***	- .005	- .100***	+ .007	+ .096***	- .076**	+ .012	+ .044*	+ .015	+ .070**	+ .183***
Lunch	+ .151***	+ .080***	+ .022	+ .135***	+ .049*	+ .023	+ .034	- .002	- .040	+ .012	+ .250***

\* significance at the 5% level

\*\* significance at the 1% level

\*\*\* significance at the 0.1% level



three point scale. Categories 1 and 2 were combined, as were categories 4 and 5, so that they represented the 2 poles of the construct. This collapsing of the data was also based on the recommendation (Matthews, 1969) that smaller categories be included into larger categories when data was being collapsed. The middle or "no opinion" category was unchanged. The collapsed data, in 3 categories, indicated opinion and its direction, but not the strength of that opinion. Chi-square analyses on the collapsed data were still unreliable because of the low cell frequencies in many of the contingency tables.

The frequency distributions of respondents for each interviewer, by city and socioeconomic group, and by age of the respondent are shown in Tables 32 and 33. The unequal distribution of respondents by interviewer, for city and socioeconomic group, would cause low cell frequencies to occur in the contingency tables, however by age categories there were no great differences between the number of surveys completed by interviewers. As a result, interviewers whose data caused low cell frequencies in the contingency tables, were eliminated from the analysis. Interviewers 5 and 6 were not included in the comparisons, and all other interviewers were compared with one another, either directly or indirectly.

The results of the chi-square analyses are given in Appendix F (p.243). The interviewers compared in these analyses, and the number of reliable chi-square tests are shown in Table 34. Of a total of 253 reliable chi-square analyses, 11 were significant, indicating that 4.3 percent of the tests for independence were significant. Therefore, the interviewer effect was negligible.



Table 32. Numbers of surveys completed by interviewers classified by city and socioeconomic group.

City/socioeconomic group	Interviewer							
	1	2	3	4	5	6	7	8
<u>Calgary</u>								
Low	0	12	87	8	2	1	44	0
Medium	0	29	119	24	8	2	59	0
High	0	17	41	10	3	0	31	0
<u>Edmonton</u>								
Low	0	31	0	72	0	20	14	36
Medium	0	46	0	91	0	22	12	42
High	0	40	0	41	0	0	14	6
<u>Vancouver</u>								
Low	95	13	0	38	17	1	0	22
Medium	116	25	0	43	9	0	0	19
High	34	14	0	22	6	2	0	9



Table 33. Numbers of surveys completed by each interviewer by age of respondent.

Age group of respondent	Interviewer							
	1	2	3	4	5*	6*	7	8
25 years	88	80	102	136	--	--	50	61
25 - 54 years	106	108	105	147	--	--	87	41
55 years	51	39	40	66	--	--	37	32

\* omitted due to limited number of surveys done by these interviewers.





Table 34. Summary of chi-square analyses for interviewer effect.

City	Socioeconomic group	Interviewers compared	Number of Reliable tests <sup>1</sup>	Number of significant chi-square values
<u>Calgary</u>	Low	3, 7	43	3
	Medium	2, 3, 4, 7	27	2
	High	2, 3, 7	20	0
<u>Edmonton</u>	Low	2, 4	26	0
	Medium	2, 4, 8	52	1
	High	2, 4	23	1
<u>Vancouver</u>	Low	1, 4, 8	40	4
	Medium	1, 2, 4	13	0
	High	1, 4	9	0
	Total		253	11

<sup>1</sup>The chi-square tests were rejected as unreliable if the contingency table had 20 percent or more cells with fewer than 5 responses or a cell containing 0 responses.



2. Questionnaire arrangement effect. There were two effects to be studied: (i) the meat order effect in each of the 6 randomized arrangements used in the questionnaires; and (ii) the construct order effect. Oven beef roast and stew beef were selected as the meat cuts to test the meat order effect, because of their widely differing positions on the pages. Oven beef roast was in the 1st, 2nd, 8th, 9th and 19th positions, and stew beef was in the 1st, 4th, 7th, 13th, 15th and 19th positions. The chi-square analysis for oven beef roast was 30.91 (24 degrees of freedom) which was nonsignificant. For stew beef the chi-square value was 28.39 (29 degrees of freedom) which was also nonsignificant.

The position of the "expense" and "nutrition" constructs were selected for analysis, because they occurred in a wide range of positions in the construct arrangements in the survey. The "expense" construct was compared on pages 3, 5, 9, 10 and 11 and the "nutrition" construct was compared on pages 4, 6, 7, 7 and 12. The chi-square data are shown in Table 35. The only significant test was unreliable because the contingency table from which the value was calculated had more than 20 percent of the cells with fewer than 5 responses.

These data indicated that neither the meat order in the semantic differentials nor the construct order in the questionnaires had an effect on the results.

3. City effect. The data for each city were compared, controlling for socioeconomic effect. The results of the chi-square tests are shown in Tables 36 (a) (b) (c). The unreliable comparisons, based on low cell frequencies in the contingency tables were omitted



Table 35. Chi-square values for construct order (8 degrees of freedom).<sup>1</sup>

Beef cuts	"Expense" construct	"Nutrition" construct
Oven beef roast	<u>16.19</u>	5.63
Fresh beef sausage	11.93	19.08
Pot roast	19.46	19.88
Broiling steak	<u>24.85</u>	22.33
Ground beef	<u>22.81</u>	<u>32.87**</u>
Stew beef	23.58	23.31
Liver (beef)	20.34	25.55
Round steak	7.20	17.52
Chuck steak	11.28	17.64

<sup>1</sup> underlined values indicate unreliable tests due to low contingency table cell frequencies.

\*\* significance at the 1% level.



Table 36(a). Chi-square values for city differences within socioeconomic groups.<sup>1</sup>

Construct Code	Low Socioeconomic groups (4 degrees of freedom)									
	beef cuts									
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak		
Expense	5.98	7.50	12.12*	4.58	9.28	12.51*	9.98*	6.26		
Tenderness	5.53	4.52	10.02*	10.58*	1.83	4.91	1.31	10.24*		
Would Buy	3.51	1.51	3.49	4.19	7.38	18.85***	1.69	9.43		
Fat	9.56*	14.42**	11.87*	8.60	4.08	14.66**	-----	2.49		
Quick	10.16*	3.76	4.72	5.69	4.41	4.03	2.18	5.61		
Nutrition	6.55	13.07*	9.59*	6.51	6.01	5.59	4.50	9.73*		
Waste	8.98	12.92*	10.29*	7.67	9.29	7.21	-----	13.93**		
Versatility	11.82*	5.04	6.18	8.56	6.83	7.45	2.59	5.57		
Guests	0.71	10.12*	9.17	3.97	3.76	5.85	0.51	4.03		
Packaging	24.38***	22.88***	26.19***	31.23***	27.33***	31.41***	26.35***	31.61***		
Picnic	13.80**	4.86	5.15	10.12*	4.22	14.71**	8.70	8.01		
Lunch	-----	15.77**	-----	-----	3.96	7.32	2.08	2.20		

\* significance at the 5% level

\*\* significance at the 1% level

\*\*\* significance at the 0.1% level

<sup>1</sup> Unreliable tests due to low contingency table cell frequencies are omitted.





Table 36(b). Chi-square values for city differences within socioeconomic groups.<sup>1</sup>

Medium Socioeconomic groups (4 degrees of freedom)

Construct Code	beef cuts							
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak
Expense	3.31	5.09	5.04	4.74	9.21	1.21	8.93	0.22
Tenderness	5.03	2.21	5.31	3.35	2.41	3.14	3.91	2.82
Would Buy	2.35	2.82	2.22	2.05	9.17	10.27*	6.82	9.95*
Fat	2.01	6.54	0.76	0.52	8.84	4.81	-----	5.40
Quick	4.64	3.07	2.18	4.49	5.56	12.56*	4.54	3.26
Nutrition	0.75	19.32***	3.15	-----	4.34	5.60	9.44	2.62
Waste	1.67	7.28	6.83	26.55***	6.44	4.53	4.57	3.62
Versatility	6.77	3.03	2.17	7.33	4.01	2.15	15.30**	5.05
Guests	8.22	1.79	5.86	5.22	5.29	3.57	4.83	0.74
Packaging	2.12	8.90	10.56*	7.85	11.07*	6.84	13.53**	8.58
Picnic	10.40*	25.30***	14.37**	24.47***	15.24**	13.88**	12.21*	16.61**
Lunch	-----	2.41	-----	-----	1.36	7.86	10.31*	-----

\* significance at the 5% level

\*\* significance at the 1% level

\*\*\* significance at the 0.1% level

<sup>1</sup>Unreliable tests due to low contingency table cell frequencies are omitted.



Table 36(c). Chi-square values for city differences within socioeconomic groups.<sup>1</sup>

Construct Code	High Socioeconomic groups (4 degrees of freedom)							
	oven beef roast	fresh beef sausage	pot roast	beef cuts		stew beef	liver (beef)	round steak
				broiling steak	ground beef			
Expense	1.37	5.51	6.15	9.29	4.64	12.59*	15.12**	9.16
Tenderness	1.71	3.53	3.41	0.95	6.70	3.31	1.04	7.99
Would buy	-----	2.12	6.01	4.22	-----	6.19	3.44	16.00**
Fat	2.54	2.39	3.93	3.33	11.14*	0.48	-----	4.91
Quick	4.16	6.38	4.71	5.62	7.32	2.60	1.96	17.59**
Nutrition	-----	1.38	8.41	-----	10.07*	2.93	-----	-----
Waste	3.99	5.41	8.80	2.83	4.34	2.33	-----	13.75**
Versatility	7.46	5.31	2.57	11.35*	-----	4.04	2.31	5.60
Costs	-----	3.67	11.13	-----	6.43	6.05	2.96	13.35**
Packaging	2.82	1.92	0.84	8.98	3.37	2.19	3.31	4.23
Picnic	0.61	2.40	-----	3.66	6.43	-----	2.42	4.61
Lunch	-----	0.55	-----	-----	1.64	-----	2.34	4.71

\* significance at the 5% level  
 \*\* significance at the 1% level  
 \*\*\* significance at the 0.1% level

Unreliable cells due to low contingency table cell frequencies are omitted.



from the tables. For the low socioeconomic group, 5 out of 96 comparisons were unreliable. For medium and high socioeconomic groups 6 and 17 comparisons were unreliable, respectively. The higher incidence of unreliable comparisons might be expected in the high socioeconomic group, because of the lower number of respondents in this group.

There was a total of 59 out of 260 reliable comparisons that were significantly different between cities. Of these, 32 of the significantly different tests out of 91 reliable comparisons occurred in the low socioeconomic group, while 18 out of 90, and 9 out of 79, occurred in the medium and high socioeconomic groups, respectively. The summarized data, by construct, are shown in Table 37. The data indicated that there were marked differences in the attitudes of low socioeconomic groups between cities. Notably, attitudes to packaging, but also amount of fat, nutritive value, wastage, expense, tenderness and suitability for picnics, showed between city differences.

The differences in response to the acceptability of packaging were primarily contributed by Vancouver respondents. These respondents were generally indicating that they were less satisfied with packaging than respondents in Calgary and Edmonton. This was shown by fewer indications that packaging was acceptable and a marked increase in the number of respondents in Vancouver having "no opinion" about packaging. The "fat" construct also had significant differences between cities. The differences could not be attributed to attitudes in any one city, although Edmonton respondents contributed to each difference. The differences between cities in attitudes to suitability for seasonal use,



Table 37. Numbers of significant differences between cities, for each construct (from Tables 36a, b and c).

Construct Code	Total Number of Reliable Tests	Socioeconomic group		
		Low	Medium	High
Expense	24	3	0	2
Tenderness	24	3	0	0
Would Buy	22	1	2	1
Fat	21	4	0	1
Quick	24	1	1	1
Nutrition	19	3	1	1
Waste	22	3	1	1
Versatile	23	1	1	1
Guests	22	1	0	1
Packaging	22	8	3	0
Picnic	22	3	8	0
Lunch	13	1	1	0
Total		32	18	9





measured by the "picnic" construct, was principally contributed by Calgary respondents. These respondents indicated more polarized opinions about broiling steak and stew beef than other respondents in this category. The only other differences that showed a consistent directional effect were those for "tenderness". Edmonton respondents consistently scored pot roast, broiling steak, and round steak as more tender than it was scored by respondents from the other two cities. There was also a larger "no opinion" category for pot roast and broiling steak scored by Vancouver respondents.

For the medium socioeconomic group, suitability for picnics showed the greatest difference in attitudes between cities. This difference was due to a higher number of "no opinions" in Edmonton than in other cities. Packaging showed between-city differences which could not be attributed to any one city. All other constructs had only one or two significant differences between cities.

Similarly the significant differences in the high socioeconomic group were spread between constructs and revealed no definite attitude differences between cities.

In Table 38 the distribution of significant differences between beef cuts is shown. The results for ground beef showed that there were few between-city differences, across socioeconomic groups. However, most differences in attitude between cities for the low socioeconomic group revealed that beef sausage, pot roast, stew beef, oven beef roast, round steak and broiling steak (in that order) accounted for between-city differences.

For the medium socioeconomic group, liver and stew beef were the



Table 38. Numbers of significant differences between cities for each beef cut (from Tables 36a, b and c).

Beef cut	Total number of reliable tests	Socioeconomic group		
		Low	Medium	High
oven beef roast	30	5	1	0
fresh beef sausage	36	6	2	0
pot roast	32	6	2	0
broiling steak	30	3	2	1
ground beef	34	1	2	2
stew beef	34	5	3	1
liver (beef)	30	2	4	1
round steak	34	4	2	4
Total		32	18	9



principal beef cuts accounting for differences, the other differences were evenly spread over the remaining cuts of beef. For the high socioeconomic group, attitudes to round steak accounted for the main between-city differences.

The differences between cities were more predominant in low socioeconomic groups than in either medium or high socioeconomic groups. Only packaging (in the low socioeconomic group) and suitability for picnics (in the medium socioeconomic group) showed a consistent trend by construct, between cities. All other differences, by construct, between cities showed no definite trend. Similarly, attitudes to specific beef cuts showed differences but without a definite trend. It appeared that socioeconomic effect might be more significant than the between-city effect.

4. Socioeconomic effect. The data for each socioeconomic group was compared, by city. The results for the chi-square tests are shown in Tables 39 (a) (b) (c). There were no unreliable values. A total of 67 out of 288 comparisons (23 percent) were significantly different. There were similar numbers of significant tests between socioeconomic groups in each city. This is shown in Table 40. The least number of significant differences in all 3 cities occurred with the "fat", "waste", "nutrition" and "packaging" constructs. There were more differences between socioeconomic groups in their attitudes to versatility and suitability for serving to guests, than for other constructs. The summarized data for beefcuts is shown in Table 41. The greatest variation in responses to specific beef cuts was for broiling steak,



Table 39(a). Chi-square values for socioeconomic differences within Calgary (4 degrees of freedom)

Construct Code	even beef roast	beef cuts					liver (beef)	round steak
		fresh beef sausage	pot roast	broiling steak	ground beef	stew beef		
Expense	1.72	7.61	22.88***	3.32	4.45	9.86*	5.86	5.63
Tenderness	12.69*	3.63	5.46	14.06**	1.99	6.83	4.11	5.30
Would Buy	7.68	4.46	11.46	10.83*	19.84***	8.18	4.20	8.36
Fat	4.86	5.34	1.06	3.60	2.40	8.48	1.91	7.48
Quick	3.02	5.51	4.92	18.62***	6.66	5.60	7.13	14.63**
Nutrition	12.47*	2.41	0.74	12.17	5.00	4.20	7.22	6.14
Waste	3.71	0.50	5.75	3.52	3.13	3.76	1.73	2.90
Versatility	11.44*	2.44	7.96	13.79**	10.46*	2.85	7.56	8.61
Guests	1.14	9.56*	21.77***	4.25	3.11	4.79	5.09	15.27**
Packaging	3.49	3.52	6.51	2.16	0.68	2.09	8.26	1.97
Picnic	9.41	7.39	11.88*	9.02	3.14	17.41**	7.44	5.10
Lunch	5.42	7.62	12.15*	7.99	0.47	14.18**	14.15**	9.88*

\* significance at the 5% level  
 \*\* significance at the 1% level  
 \*\*\* significance at the 0.1% level





Table 39(b). Chi-square values for socioeconomic differences within Edmonton (4 degrees of freedom).

Construct Code	beef cuts							
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak
Expense	8.83	3.13	10.76*	5.83	7.74	16.65**	5.58	4.03
Tenderness	7.33	0.67	5.99	7.15	2.03	8.25	6.20	9.86*
Would Buy	12.34*	4.27	6.56	21.89***	2.16	11.67*	4.17	8.96
Fat	3.88	2.89	1.26	3.24	5.20	1.49	1.93	7.21
Quick	1.78	0.47	0.82	22.91***	10.54*	2.96	7.26	4.75
Nutrition	1.02	0.66	2.53	1.77	3.41	3.42	3.89	1.69
Waste	13.16*	5.08	7.49	7.39	2.96	2.99	7.71	7.69
Versatility	5.25	10.63*	1.30	13.89**	6.77	7.91	14.32**	15.04**
Guests	2.91	9.56*	37.42***	12.79*	3.29	11.62*	8.54	2.52
Packaging	8.27	6.63	5.17	4.87	3.60	7.54	8.02	2.00
Picnic	5.39	8.81	16.45**	12.64*	5.16	12.63*	11.10*	21.40***
Lunch	2.58	2.54	3.04	10.00*	3.00	3.36	3.61	3.40

\* significance at the 5% level  
 \*\* significance at the 1% level  
 \*\*\* significance at the 0.1% level



Table 39(c). Chi-square values for socioeconomic differences within Vancouver (4 degrees of freedom).

Construct Code	beef cuts							
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak
Expense	1.36	19.31***	17.98**	8.65	7.50	4.19	11.07*	9.94*
Tenderness	12.89*	8.56	9.62	25.03***	8.01	7.49	0.89	20.44***
Would Buy	21.65***	5.07	3.48	9.38	2.19	0.68	11.85*	13.40**
Fat	4.58	8.80	9.64*	12.43*	4.92	4.90	1.87	3.09
Quick	4.92	9.36	6.70	18.55**	11.75*	6.58	6.40	10.71*
Nutrition	4.02	5.28	3.28	11.65	2.58	3.28	10.08	4.12
Waste	7.09	7.65	6.48	10.60	1.80	1.46	2.33	9.35
Versatility	1.49	13.85**	2.38	3.78	27.16***	14.04**	1.30	10.76*
Guests	7.35	1.17	9.54*	10.10*	1.59	2.94	4.49	17.16**
Packaging	5.56	8.36	3.20	6.33	7.51	5.35	3.21	5.48
Picnic	9.01	3.78	8.98	9.13	8.15	13.18*	9.80	9.52
Lunch	4.95	4.56	8.84	12.13*	1.36	6.75	0.65	2.28

\* significance at the 5% level  
 \*\* significance at the 1% level  
 \*\*\* significance at the 0.1% level



Table 40. Numbers of significant chi-square values for each construct between socioeconomic groups.

Construct Code	City		
	Calgary	Edmonton	Vancouver
Expense	2	2	4
Tenderness	2	1	3
Would Buy	2	3	3
Fat	0	0	1
Quick	2	2	3
Nutrition	1	0	0
Waste	0	1	0
Versatility	3	4	4
Guests	3	4	3
Packaging	0	0	0
Picnic	2	5	1
Lunch	4	1	1
	—	—	—
Total	21	23	23



Table 41. Numbers of significant chi-square values for each beef cut between socioeconomic groups.

Beef Cut	City		
	Calgary	Edmonton	Vancouver
oven beef roast	3	2	2
fresh beef sausage	1	2	2
pot roast	4	3	2
broiling steak	4	6	5
ground beef	2	1	2
stew beef	3	4	2
liver (beef)	1	2	2
round steak	3	3	6
Total	21	23	23





whereas liver, ground beef and beef sausage accounted for very little of the difference in responses between socioeconomic groups.

Although it appeared that the socioeconomic effect might be more important than the between-city effect, this was not necessarily shown. However, the distribution of the differences between socioeconomic groups was consistent between cities, as shown in Tables 40 and 41.

Within constructs, the differences in each city were not necessarily due to the same meat cuts. In Calgary and Edmonton the high socioeconomic groups tended to score broiling steak as less versatile, than it was scored by low and medium socioeconomic groups. More low socioeconomic respondents in Edmonton and Vancouver scored fresh beef sausage as being less versatile, than it was scored by the medium and high socioeconomic groups.

For the suitability for serving to guests construct, high socioeconomic respondents in Edmonton had more polarized opinions, while in Vancouver the same group had less polarized opinions than other groups. Pot roast was the only meat cut that was scored consistently by socioeconomic groups, between cities. High socioeconomic groups indicated that they felt pot roast was less suitable for serving to guests, than the low or medium socioeconomic groups. High socioeconomic groups in Calgary and Vancouver also judged round steak less suitable for guests than did the low and medium socioeconomic groups.

Although there were similar numbers of significant tests between socioeconomic groups within each city, this did not seem to indicate greater consistency in attitudes. The different constructs and meat



cuts contributing to the socioeconomic effect detracted from the apparent consistency in the results.

5. Age effect. The surveys were classified on the basis of age of the respondent. The age categories included: under 25, 25-55, and over 55 years. Chi-square tests for independence were carried out on this basis and the results are shown in Table 42. A total of 51 out of 96 tests was significant, when the data was not controlled for city or socioeconomic effects. Age had the least effect on attitudes to "fat" and "packaging", while the greatest effect was observed for the "lunch", "picnic" and "would buy" constructs. The opinions expressed for all other constructs were markedly affected by age group. The differences observed with beef sausage were principally due to the older age category not having specific opinions about this product.

The distributions of respondents by age between socioeconomic groups is uneven (see Table 14, p. 63). Hence, the socioeconomic effect was re-examined with control for age categories. The results for socioeconomic effect, controlled for age of respondent, are shown in Table 43 (a) (b) (c). A total of 52 (23 percent) out of 228 reliable comparisons of socioeconomic effect, for all age categories, were significantly different. Large numbers of unreliable tests occurred in the older age categories, because of low cell frequencies in the contingency tables. For socioeconomic effect within the 3 age categories, there were 14 out of 53 reliable tests (26 percent) that were significantly different for the older age category; 22 out of 85 (26 percent) that were significantly different for the middle age category; and 16 out of 90 (18 percent) for the younger age category. These data indicated that socioeconomic



Table 42. Chi-square values for effect of respondent age across cities and socioeconomic groups (4 degrees of freedom).

Construct Code	beef cuts							
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak
Expense	7.52	22.57***	8.40	3.05	21.79***	21.24***	6.76	11.41*
Tenderness	2.97	21.60***	7.40	19.00***	14.69**	14.37**	31.83***	6.55
Would Buy	12.30*	45.02***	14.55**	22.14***	26.40***	5.81	22.66***	22.36***
Fat	8.68	5.55	6.73	7.22	8.98	8.83	6.01	17.32**
Quick	2.47	34.51***	11.18*	20.21***	14.86**	9.40	7.51	8.73
Nutrition	12.55*	3.15	11.04*	2.89	50.29***	13.73**	9.48	6.44
Waste	2.75	36.40***	6.44	10.63*	3.65	4.02	15.08**	14.57**
Versatile	7.12	25.32***	7.38	39.51***	59.82***	3.06	11.44*	13.98**
Guests	1.75	4.85	8.41	17.06**	4.72	16.36**	2.50	3.01
Packaging	1.36	13.50**	6.72	7.04	7.38	2.18	4.56	8.57
Picnic	16.46**	21.02***	23.96***	58.03***	18.22**	27.99***	17.48**	30.07***
Lunch	13.44**	40.43***	25.41***	19.31***	7.47	17.05**	4.52	29.14***

\* significance at the 5% level

\*\* significance at the 1% level

\*\*\* significance at the 0.1% level



Table 43(a). Chi-square values for socioeconomic effect for respondents under 25 years of age (4 degrees of freedom)<sup>1</sup>.

Construct Code	oven beef roast	fresh			pot roast	beef cuts				stew beef	liver (beef)	round steak
		beef	sausage			broiling steak	ground beef					
Expense	6.70	2.25			11.82*	-----	2.99			1.09	4.42	2.59
Tenderness	12.18*	1.54			8.66	21.63***	3.19			10.65*	3.37	13.59***
Would Buy	10.36	2.46			11.23*	5.37	1.95			2.19	3.93	6.17
Fat	12.43**	2.99			1.41	3.63	2.02			2.18	-----	11.04*
Quick	1.93	2.41			4.00	32.85***	5.79			10.39*	7.84	10.17*
Nutrition	3.60	2.90			1.66	6.19	0.44			5.99	10.44*	2.40
Waste	10.53*	1.91			2.35	6.35	2.21			0.25	4.05	4.53
Versatile	2.67	6.80			2.23	3.62	5.45			-----	7.31	14.05***
Guests	2.36	7.34			29.44***	-----	3.96			3.93	7.14	8.70
Packaging	4.20	3.39			1.42	5.60	0.02			5.42	3.72	1.55
Picnic	3.40	3.32			17.54**	5.35	7.96			5.72	7.47	5.75
Lunch	-----	2.22			8.32	-----	5.64			9.41	2.60	9.68

<sup>1</sup> Unreliable tests due to low contingency table cell frequencies are omitted.

\* significance at the 5% level

\*\* significance at the 1% level

\*\*\* significance at the 0.1% level





Table 43(b). Chi-square values for socioeconomic effect for respondents 25 to 55 years of age (4 degrees of freedom)<sup>1</sup>.

Construct Code	beef cuts							liver (beef)	round steak
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef			
Expense	4.19	10.83*	26.55***	1.70	20.32***	16.37**	7.10		13.62**
Tenderness	12.73*	0.63	4.09	10.61*	3.69	5.79	4.51		10.70*
Would Buy	-----	15.39**	9.05	19.65	2.44	4.23	16.50**		10.77*
Fat	6.65	6.54	1.55	2.35	3.17	8.77	-----		0.85
Quick	0.68	0.85	2.62	9.09	7.83	1.27	9.77*		13.32**
Nutrition	-----	0.21	2.28	-----	3.42	8.51	8.78		2.43
Waste	12.31*	3.70	5.26	9.13	10.05*	1.14	1.56		4.11
Versatile	5.37	17.69**	8.48	15.73**	0.91	8.12	14.53**		5.57
Guests	-----	14.16**	24.36***	-----	7.73	5.96	16.41		12.03*
Packaging	2.48	8.38	2.63	2.83	6.32	0.86	6.64		1.17
Picnic	1.24	3.17	4.68	1.10	1.42	-----	5.19		15.21**
Lunch	-----	2.42	-----	-----	5.71	3.64	4.94		-----

<sup>1</sup> Unreliable tests due to low contingency table cell frequencies are omitted.

\* significance at the 5% level

\*\* significance at the 1% level

\*\*\* significance at the 0.1% level



Table 43(c). Chi-square values for socioeconomic effect for respondents over 55 years of age (4 degrees of freedom)<sup>1</sup>.

Construct Code	beef cuts							
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak
Expense	-----	8.98	9.26	-----	2.19	4.51	1.21	12.15*
Tenderness	-----	23.34***	4.27	-----	-----	1.75	2.69	3.38
Would Buy	-----	4.65	-----	-----	5.40	-----	-----	-----
Fat	2.45	1.37	3.92	-----	6.70	10.56*	-----	4.26
Quick	-----	-----	-----	-----	-----	-----	-----	6.40
Nutrition	-----	2.79	-----	-----	3.71	-----	-----	-----
Waste	-----	1.13	4.74	-----	-----	1.76	1.53	5.97
Versatile	-----	10.19*	16.28**	-----	-----	7.21	7.56	11.80**
Guests	-----	1.38	8.43	-----	3.69	12.30*	-----	10.91*
Packaging	0.83	3.19	3.54	3.13	5.73	0.74	3.23	2.51
Picnic	-----	10.92*	-----	19.56***	10.66*	-----	-----	12.46*
Lunch	-----	7.63	-----	-----	13.45**	-----	10.64*	-----

<sup>1</sup>Unreliable tests due to low contingency table cell frequencies are omitted.

\* significance at the 5% level

\*\* significance at the 1% level

\*\*\* significance at the 0.1% level



effect was independent of age effect, despite the greater percentage of older age respondents in the low socioeconomic groups.

The age effect was further investigated for significant differences in the factors of acceptability. The "would buy" construct was correlated with the remaining 11 constructs for respondents under 55 years of age. Only the beef cuts were included. The data are shown in Table 44. The constructs which were consistently correlated with "would buy": "tenderness", "fat", "nutrition", "waste", "guests", "packaging" and "lunch", were the same as those for the beef cuts when all age groups were included in the analysis (see Table 23, p. 89).

6. Summary of tests of independence. The study of the effect of interviewer and questionnaire arrangement on the results obtained in the semantic differential survey indicated that the results were not significantly affected by these variables. The chi-square tests for independence of the data indicated that city, socioeconomic group and age category had an effect on respondent opinions about the beef cuts. More of the between-city differences were attributable to differences between the low socioeconomic groups in the different cities, than either the medium or the high socioeconomic groups. The differences between socioeconomic groups were spread over all constructs, all meats and all cities, and did not indicate a specific trend. There was a marked age effect, which was shown to be independent of the socioeconomic effect. The age effect indicated that there were different opinions between age groups for many of the constructs, with many of the beef cuts, however these differing opinions did not affect the factors of acceptability for the beef cuts.



Table 44. Correlation coefficients of "Would Buy" for beef cuts by respondents under 55 years of age.

Construct Code	beef cuts									
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak	chuck steak	
Expense	-.039	+.052*	-.064**	-.017	+.022	+.036	+.006	-.050*	-.004	
Tenderness	+.136***	+.232***	+.172***	+.181***	+.166***	+.167***	+.306***	+.132***	+.129***	
Fat	+.147***	+.113***	+.190***	+.126***	+.101***	+.204***	+.282***	+.149***	+.182***	
Quick	-.043	+.119***	-.041	+.160***	+.145***	-.033	+.222***	+.066**	+.129***	
Nutrition	+.146***	+.147***	+.192***	+.155***	+.132***	+.192***	+.169***	+.171***	+.226***	
Waste	+.091***	+.143***	+.151***	+.168***	+.125***	+.228***	+.325***	+.152***	+.185***	
Versatile	+.015	+.056*	+.082***	+.028	+.121***	+.023	-.030	+.121***	+.134***	
Guests	+.244***	+.209***	+.364***	+.192***	+.162***	+.196***	+.160***	+.278***	+.360***	
Packaging	+.046*	+.154***	+.054*	+.062**	+.119***	+.118***	+.081***	+.099***	+.152***	
Picnic	+.026	+.048*	+.027	-.053*	+.013	+.090***	+.055*	+.019	-.062**	
Lunch	+.120***	+.142***	+.184***	+.127**	+.068**	+.164***	+.195***	+.187***	+.252***	

\* significance at the 5% level

\*\* significance at the 1% level

\*\*\* significance at the 0.1% level





Respondent Comments on Constructs

Comments were volunteered by 299 respondents on the 1469 surveys. Of these, 202 were unfavourable comments about packaging. These covered a wide range of specific complaints, but 73 referred to deceptive packaging. This observation should be considered with the result (Appendix E) that respondents were generally satisfied with the packaging of meats.



## DISCUSSION

Method Development and Reliability

The repertory grid technique was used in the development of the semantic differential scales for the final survey, to improve the relevance and the consistency of interpretation of the factors (constructs). Thus many of the factors investigated in this study differed from those investigated in former studies (Ashby et al., 1941; Lasley et al., 1955; Van Syckle and Brough, 1958; Coles, 1956; Dunsing, 1958; and Field et al., 1964). These were almost exclusively studies of sensory characteristics of beef. In the U. S. D. A. study (Weidenhamer et al., 1969), in addition to the sensory characteristics of meats being evaluated, some connotative aspects were introduced. The sensory characteristics of flavour, colour of fat and lean, juiciness, and texture, and their relationship to grades of beef have been the traditional foci of these studies. Many studies have indicated that consumer knowledge of grades is limited (Hutchinson, 1970; Law, et al., 1965 a; Weidenhamer, et al., 1969), furthermore, subsequent studies indicated that denotative (sensory) characteristics of the products are less important to acceptability than connotative (sociopsychological) aspects (Dichter, 1969; Lunn, 1969). In general, the sensory studies failed to disclose reasons why consumers preferred some cuts, or types of meats to others.

In the construct development survey, only two sensory characteristics, tenderness and fat content, were disclosed as factors



differentiating meats. Relatively few respondents cited toughness or tenderness as differentiating characteristics of the meat cuts in the repertory grid study. This has been discussed in "method development" (p. 39). Fat appeared to refer to fat content, not necessarily visible fat, but rather the preconceived expectations of the fattiness of the meat or meat cut. It was apparent that laboratory orientated sensory characteristics for the evaluation of meat, and the consumer orientated concepts of these characteristics, must be integrated for effective communication of product quality to the consumer.

In the construct development survey an average of 5 constructs was obtained per respondent. Therefore, not all of the 12 constructs used in the semantic differentials would be relevant to all respondents. Furthermore, the "packaging" construct did not feature as a factor in the construct development survey, with the result that it might require special interpretation compared to the other constructs. The factors which were most frequently mentioned by respondents in the construct development survey should be those which were the most important factors of attitude. However, the quota sampling used in this survey could limit the validity of such interpretations. Because some of the constructs were of limited significance in the semantic differential survey, a split - half reliability analysis (Lindzey and Byrne, 1968) was not considered appropriate.

The reliability of the data was tested by analyzing for independence of the data between interviewers. The initial analyses for interviewer effects indicated that interviewers might have a



marked effect on the results. Although it was planned that interviewers should do equal numbers of interviews in each city, it was necessary to modify this. To provide the necessary control and continuity, one interviewer worked in Calgary and one in Vancouver throughout the interviewing. The remaining interviewers rotated between cities and did not necessarily do equivalent numbers of interviews within each city and socioeconomic group. As a result, direct comparisons between all interviewers could not be made. Nonetheless, an effective comparison between interviewers was possible, because the rotating interviewers could be tested for independence with the resident interviewer in each of Calgary and Vancouver, within each socioeconomic group. In that less than 5 percent of the analyses for independence between interviewers were significantly different, the interviewer effect was considered to be negligible.

The reliability of the data was also tested by analysis of the effect of construct order within the survey format, and meat cut order within constructs. Both construct order and the order of the meat cuts on the pages were randomized in the planning of the survey. The non-significant results for these analyses indicated that there was no effect of the position of a meat cut on the list for each semantic differential. The order of the constructs also had no effect, so that it could be assumed that respondents were answering the end, as reliably as the beginning, of the survey.

#### Sample Reliability

The 1469 surveys carried out in this study, were evenly





distributed between cities, and between socioeconomic groupings used in the sampling. However, on re-classifying the socioeconomic status of the respondents, based on income, occupation and education data, the distribution of the sample between the re-classified socioeconomic groupings was less even. Despite this, reliable comparisons could be made between cities, socioeconomic groups and age groups. This was judged by the generally high percentage of reliable contingency tables in the chi-square analyses for independence.

The incidence of refusals to complete the survey and of sampled respondents "not at home" was greater in Vancouver than in either Calgary or Edmonton. In all cities, most of the refusals were in the low socioeconomic areas. This is consistent with findings that indicated higher refusal rates in centre city areas, where the low socioeconomic groups tend to be concentrated (Lansing, Withey, and Wolfe, 1971). Part of the higher incidence of refusals and "not at home's" in Vancouver might also be accounted for by the higher incidence of sampled households in restricted-access apartment buildings. Even after gaining access to some of these buildings, there was a reluctance to answer the apartment door. The lower return rate of 50 percent for Vancouver, was in accordance with the generally observed lower return rates in larger cities (Lansing et al., 1971). Matthews (personal communication) indicated that, without call-backs, a 67 percent return rate might be expected in Edmonton.

The individual reasons for refusals could be considered unimportant, because of their low incidence, except for the "not interested" category which accounted for 37, 30 and 56 percent of the



refusals in Calgary, Edmonton and Vancouver, respectively. Of these "not interested" refusals, 65, 65 and 79 percent were from respondents in the low socioeconomic areas of these cities. There is no indication that the sample was biased by refusals of any particular group of respondents. In general the interviewers reported that respondents completing the survey were willing to do so, once they became reassured that it was a legitimate survey. No difficulties were reported with the length of the survey, which took, on the average, 30 minutes to explain and complete.

The 1971 Canadian census statistics were not yet available for the cities in this study. Publication of the census tract information is only expected at the end of 1972 and the beginning of 1973 (Statistics Canada, 1972). As a result, the reliability of the various population characteristics could not be compared to the most recent population data. In some cases the 1961 census data, and other studies based on the 1961 census, have been used. However, with the stratified sampling method used in this study, where an equal distribution of respondents in each socioeconomic group was planned, some of the characteristics of the sample might deviate from the characteristics for the total population.

Income data would be difficult to compare to census statistics, because it was one of the sampling criteria. In the regrouped income categories, used in the socioeconomic re-classification of the respondents, Vancouver had a larger percentage of respondents in the low income group, and a smaller percentage in the high income group than either Calgary or Edmonton. Differences noted in the percentages



of the samples in the \$5,000 - 6,999 and \$7,000 - 9,999 for Calgary, compared to Edmonton and Vancouver, were eliminated by the re-grouping. In this study, there was a higher income mean for Calgary respondents. This observation was consistent with the observation by McVey (1971) that the average income in Calgary was higher than that in Edmonton.

The occupation data were evenly distributed between cities, except for the relatively low professional group in Vancouver, the relatively high management group in Calgary and the high retired, unemployed or student group in Vancouver. This was consistent with the census data for 1961 (Dominion Bureau of Statistics, 1964, Bulletin 3.3-1), which indicated that Edmonton was characterized by a higher percentage of professional people; that Calgary's high income group, had a higher percentage of management people than either of the other two cities; and that Vancouver had more unemployed and retired residents. To avoid difficulties of classification of obscure occupations, the skilled and unskilled categories were not differentiated in the occupation classification of the respondents. However, on the basis of level of education, the skilled and unskilled workers became differentiated in the socioeconomic re-classification of respondents. The education classification referred to the main wage earner's level of education. Only if there was no male head of the household was the female respondent's education level considered. Partial education levels were included to assist respondents in completing the survey, but they were not used in the classification of education level.

The re-classification into socioeconomic groups, compared to classification on the basis of income groups alone, increased the size



of the "low" group, and decreased the size of the "high" group. The U. S. D. A. study (Weidenhamer et al., 1969), as well as other studies, used income as the group classification comparable to socioeconomic classification in this study.

The demographic characteristics of the sample were also consistent with the general characteristics of the population reported in the 1961 census. The data for household size, age of the respondents, employment of females outside the home and place of birth indicated general similarities between cities. The exceptions to these were noted in the results. The older age group and foreign born residents tended to fall into the lower socioeconomic groups, as reported by Kupfer (1967) and Ossenberg (1967). There were more single and two person households and more people in the older age group in Vancouver. This was consistent with the 1961 census data. Based on the socioeconomic and demographic data there was no reason to suspect that factors other than city, socioeconomic group and age might have influenced the data. However, it would have been valuable to compare these distributions to the Canada 1971 census data.

The observation that there were more British born respondents in Vancouver, more United States respondents in Calgary and more Eastern European respondents in Edmonton, was consistent with the 1961 census data (Dominion Bureau of Statistics, 1964, Bulletin 1.2-7). Since the majority of the respondents were born in Canada and other ethnic groups were too small to carry out analyses, the data could not be studied for ethnic group effects. Furthermore, the data did not provide information on ethnic affiliations of Canadian-born respondents.





### Meat Usage Patterns

The differences in meat buying habits between cities and between socioeconomic groups suggested that meat buying might be influenced by both economic and cultural influences. However, in Vancouver the generally smaller family size of the surveyed households, and the larger proportion of single persons, as well as the larger proportion of older persons, could account for the lower incidence of buying meat in bulk. The 1961 census indicated that there was a higher proportion of butchers per unit of population in Vancouver, than in either Calgary or Edmonton (Dominion Bureau of Statistics, 1964, Bulletin 6.1-1). This was consistent with the higher incidence of buying meat at butcher shops in Vancouver.

Beef was the most frequently served meat by all respondents, though the frequency of serving beef decreased for low socioeconomic groups. It is well documented that as income increases, beef consumption rises (Brandow, 1961; Kohls, 1961; Weidenhamer, et al., 1969; Williams and Stout, 1964). Furthermore, as beef consumption decreases, pork and poultry consumption usually increase (Williams and Stout, 1964). In this study, low socioeconomic respondents reported higher poultry consumption than pork, whereas the medium and high socioeconomic groups consumed more pork than poultry. Weidenhamer et al. (1969) reported a similar observation between income groups.

In ranking the order of choice of meats, beef was generally as readily selected as the first choice, as lamb was selected as the last choice. However, the ranking of pork, poultry and fish in positions



2, 3 and 4 often appeared to be arbitrary. It was not possible to separate the influence of price and preference in the order of selection of pork and poultry. Poultry had high acceptability ratings in these studies, in fact, equivalent to broiling steaks. The relatively low price of poultry, however, might detract from its apparent prestige value, and the large take-out restaurant trade in poultry might also influence poultry usage in the home.

Differences in meat usage patterns between respondents eating in their homes, compared to eating out, warrants special attention. At present, 30 percent of meals are eaten outside the home, and this is expected to increase to 40 percent by 1978 (Information Canada, 1971). The growing importance of this trade warrants special attention by the meat industry. This should be of special significance to the beef industry, because it is in the take-out restaurant trade that its preferential position, is being challenged.

### Market Segments

The effects of city, socioeconomic group and age category on opinions and attitudes to beef were studied to determine the need for market segmentation in beef promotion. The differences in the medium and high socioeconomic groups between cities were so diverse that no trends could be identified. In the low socioeconomic groups, between-city differences could be identified. The principal difference was in opinions about packaging. This difference could have been caused by the high proportion (30 percent) of respondents in the low socioeconomic group in Vancouver, who purchased meat at butcher shops. These



respondents could be expected to lack opinions about packaging, as reflected in the results, compared to respondents in Calgary and Edmonton, where only 5 and 7 percent of this group purchased meat at butcher shops, respectively.

Without the packaging difference, the remaining differences between the low socioeconomic groups was sufficiently diverse, that they could be considered in the same way as the medium and high socioeconomic groups. This interpretation of the data was consistent with the findings for between - socioeconomic groups, within cities. A similar effect was observed with the "picnic" construct in the medium socioeconomic group. Both the between-city and the between-socio-economic group, within city differences were so scattered that separate promotions between or within cities would not be warranted.

Age of the respondent had a greater effect on opinions and attitudes to beef than city or socioeconomic group. Unlike the city and socioeconomic group differences, age category differences were consistent, and could be interpreted. The age categories from the surveys were grouped to give a large middle age group, for comparison with the young (<25 years) and the older age (>55 years) groups. The middle and young age categories represent the most important groups for beef promotion.

In general, the older age category respondents did not have opinions about many of the constructs and meat cuts. Weidenhamer et al. (1969) reported that younger housewives appeared to be more "expressive" in their opinions about meats. In the Weidenhamer study, there was no means of testing this. However, in this study, the results indicated



that, where the older age category respondents were responsible for the differences between the age groups, this was generally due to a lack of opinion.

The young age group had more favourable opinions about highly acceptable meat cuts, such as broiling steak, and more unfavourable opinions about meat cuts which are not generally acceptable (such as pot roast, liver, round steak), than the other age groups. They also seemed to have a different frame of reference to prices, and scored ground beef, stew beef and round steak as less expensive than the middle or older age groups. The respondents indicated their age within 7 age categories. These categories could be regrouped for a further study of the effect of age group on opinions and attitudes to beef.

#### Factors Affecting Attitudes Toward Beef

The factors disclosed by the repertory grid survey could be classified into those which indicated evaluation, potency, and activity. The constructs which were primarily evaluative were: would buy, expense, tenderness, fattiness, waste, and packaging; while potency was measured by the nutrition, guests, and lunch constructs; and activity by the quick, versatile, and picnic constructs. This classification was arbitrary, and some of the constructs measured more than one dimension. But the constructs covered all 3 of these dimensions described by Heise (1970). Dichter (1964) described the potency factor in terms of the "strength" or "masculine" image of beef. He contrasted this with the far less masculine connotation of chicken, and stated that this was one of the major reasons for the high acceptability of beef.





Most of the factors associated with acceptability (would buy) were those classified as evaluative. This might be expected because the evaluative characteristics refer to "good-bad" qualities, and are more commonly used to describe products (Heise, 1970). This has been the general emphasis of previous meat studies. The contribution of the other dimensions described by Heise (1970) have not been recognized in meat studies. However, in this study, the use of the repertory grid technique in the method development, indicated the presence of these dimensions in consumer differentiation of meats.

The "would buy" construct was the reference for acceptability. This construct questioned whether respondents "would" or "would not" buy each meat cut. In the construct development survey, many respondents gave this as a factor differentiating meats. The relationship of this construct with the other constructs in the survey indicated the reasons for meat preferences. Meat tenderness, nutritive value and suitability for serving to special guests were important determinants of acceptability for all meats and meat cuts studied. Packaging, fat content and wastage were of similar importance in acceptability; however, neither the packaging of chicken, nor the fat content of bacon were factors influencing the acceptability of these meats. All of the beef cuts studied were more acceptable as dinner meats than luncheon meats, though ground beef, liver and beef sausage showed a certain degree of suitability for both.

The other evaluative constructs were expense, tenderness, fat, waste and packaging. The expense factor was one of the most frequently mentioned constructs on the construct development survey. Price is a



basic determinant of demand, and determines the quantity of the product purchased. To control the interpretation of this construct, it was worded "expensive meats - less expensive meats". This avoided meat being compared to other food items, in which case meats would be generally rated as expensive. It appeared that the respondents were judging expense as the price per pound, and not price per edible pound, which would be a better indicator of relative cost. In the retailing of meats, the consumer needs to be educated to compare prices on the basis of cost per edible pound. Expense was not strongly correlated with acceptability, and this applied to the expensive and more prestigious cuts of beef. Expense was an important factor in deciding the suitability of beef cuts for guests, but it was not an important factor for suitability of other meat cuts for guests.

Tenderness was infrequently used as a factor to differentiate meats, in the construct development survey. This suggested that tenderness might not be an important factor in acceptability of meats. It also appeared that respondents were interpreting tenderness, as tenderness after cooking. Therefore this construct would represent a reflection on the respondent's cooking ability. As a result the term "tough" was not used in this construct, and respondents rated meats on the scale "very tender meats - less tender meats". Contrary to the indication that tenderness might be relatively unimportant in the acceptability of meats, this construct was highly correlated with "would buy" for all meats and meat cuts studied.

The opinions about the fattiness of the meats were tested with the "fatty - lean" construct. In general it appeared that the



respondents were rating the meats on preconceived ideas of fat content. This was interpreted from the distribution of pork and beef cuts in the ranked median scores (Appendix E, p. 234). In general, studies have assumed that consumers can judge fat content. In studies by Brayshaw et al. (1967), however, it was shown that consumers could not judge between steaks with 16 percent variation in visible fat. This further supported the view that the respondent's judgement of fattiness was determined by preconceived ideas. Beef cuts generally received a favourable rating on the "fatty - lean" construct. Only fresh beef sausage was rated on the "fatty" pole of the construct, and it was considered better than fresh pork sausage, despite the fact that both pork and beef sausage are allowed up to 40 percent fat by Health Protection Branch regulations (National Health and Welfare, 1954). The fat content was highly correlated with acceptability. In fact, it might not be actual fat content, but rather the preconceived image of the fat content of the meat that was correlated with acceptability. Fattiness was not related to expense, but was related to nutrition, indicating that fat content might be more important for its "healthfulness" connotation, than for its wastage, and therefore, "expense" connotation.

The waste construct defined waste as excess fat and bone. The construct was worded: "contain much waste such as bone and excess fat - contain little waste". Despite this, the meat cuts judged to have a high fat content, were not rated as "containing much waste". There were several possibilities for this unexpected lack of agreement in opinions about fat and waste. Although the construct was specific in



defining waste, the possibility existed that the poles of the construct were too strong. This possibility was indicated by the ranked median scores for all meats being in the 3 to 5 range (Appendix E, p. 237). Other factors influencing this observation might be that, not all fat and bone was considered as waste; that fat content was an in-store judgement, whereas waste might be an in-home judgement; or that, despite the definition of waste, it meant something else to the respondents. This difference between fat and waste could have been influenced by fat being related to nutrition, and fat content being judged on the basis of preconceived ideas. The interpretation of the consumers concept of waste requires particular caution, but it could have bearing on the promotion of high fat meats and meat cuts to the consumer.

The packaging construct was introduced as a researcher construct. Packaging was not mentioned as a factor differentiating meats in the repertory grid survey, yet in the U. S. D. A. study (Weidenhamer et al., 1969) it was found to be the most common cause of consumer complaints about meat. A similar trend was found in this survey. While packaging did not differentiate meats, it was strongly related to acceptability, and referred to possible and actual deception in meat packaging practices. The median scores for packaging indicated that all packaging was acceptable. This might have been influenced by the negative pole of the construct which was "not acceptably packaged". If the packaging was not acceptable, it is reasonable to assume that consumers would not buy the meat.

These constructs were classified as evaluative, measuring consumer evaluation of meats. From the discussion it appeared that





this classification was correct, except for the "fat" construct. Fat content might be a potency factor. This would be due to its relationship to the "nutrition" construct. The "waste" construct gave unexpected results, that were difficult to interpret. Waste should be further studied to determine more accurately its connotation, for use in meat promotion. The evaluative factors did not account for the consumer preferences for beef. Interpreting the data from the image profiles (Table 22, p.86 ) for the evaluative constructs alone, turkey, chicken and wieners had the highest ratings; cold cuts, round steak and liver had more positive evaluative scores than ham, steak and ground beef; and bacon and oven beef roast had negative evaluative scores.

The potency factors included the "nutrition", "guests" and "lunch" constructs. Potency is described as a power dimension (Heise, 1970) such as "powerful - powerless". In relation to meats, nutritive value and suitability for serving to guests have a prestigious image; nutritive value also has a "strength" connotation; and suitability for serving to guests has a "social strength". The suitability for use at lunch or dinner is closely related to the consumer concept of nutrition. The lunch construct was therefore incorporated into the potency factors, however it might not be an independent measure of potency, and based on its association with "quick" and "versatile" it might also be reflecting activity.

The "nutrition" construct, as interpreted by the respondents, referred to the overall "goodness" of the meat. It included the fattiness, healthfulness and degree of processing or "purity" of a meat. If meats are consumed for their protein content, then the



nutritive value of meats might be considered to be equivalent. Although minor differences in nutrients occur between meat types, the principle difference could be in the amount of protein per unit. This would be influenced by fat, bone, moisture and additives in processed meats. Meats considered to be of relatively low nutritive value were either those with an image of high fat content, or were ground or processed. In addition, the positive correlation of the "nutrition" and "tenderness" constructs indicated that respondents might also consider less tender meats to be less nutritive. This could have been the reason for the relatively low nutritive value of chuck steak, recorded in the results. However, most of the opinions about nutritive value could be ascribed to fat or processing. The "nutrition" construct was also highly correlated with suitability for dinner, as opposed to lunch or breakfast. Thus acceptable lunch meats do not necessarily have or need an image of "being good for you". The suitability for serving to special guests was used as a construct, because of its importance as a factor for differentiating meats. It was considered that this construct would serve as a measure of prestige. Prestige is defined as "importance, respect, etc. due to appearance of wealth or power" (Funk and Wagnall, 1963). For the beef cuts, this construct was correlated with expense. However, meats such as chicken and turkey, which were considered inexpensive, were considered suitable for serving to guests. Thus it appeared that prestige (price) was important to the suitability of beef cuts for guests, but that some other meats were considered suitable for serving to guests without being "prestigious". Chicken, turkey and ham were characterized by their suitability for guests



(Table 22, p. 86 ) and were considered relatively inexpensive.

The U. S. D. A. study (Weidenhamer, et al., 1969) was the only other study that considered the prestige factor of meats. They assumed that suitability for guests measured prestige. The same meat cuts, except turkey (which was not included in their study) were found suitable for guests. Chicken was found to be considered more suitable for guests by lower income groups. Similar analyses were not done in this study, but from the increased usage of poultry by low socioeconomic groups in all 3 cities (Table 19, p. 70) it appeared that there was a similar increased acceptability of poultry by lower income groups.

The commonly held idea that beef is the most prestigious meat was not confirmed by this study. However, certain cuts of beef were characterized by prestige. No other meats could be considered prestigious, if expense was considered a necessary aspect of prestige. Prestige has been generalized to include all beef, but this study showed that not all beef cuts were prestigious.

The "lunch" construct differentiated the meats as "dinner" or "lunch" and "small meal" meats. Because suitability for lunch was significantly correlated with "nutrition" for beef cuts, lunch or breakfast meats were not viewed as highly nutritious, but they were usually quick to prepare and tender. These were acceptable meats on the basis of the "would buy" construct. However, they did not rate well on overall acceptability, because of their lack of suitability for guests, nutrition and leanness. They were perceived as a different product, filling a different need. They did not readily substitute for the dinner meats. It is important that this aspect of their image



be understood in their promotion. The promotion of other meats, such as fresh beef sausage, and the development of new products, should be done with consideration for this strong differentiation between the uses of meats.

Based on these potency factors, the image profiles given in Table 22 (p. 86) indicated that steak, oven beef roast, turkey and chicken had the highest scores for this dimension. From Dichter's (1964) observation that beef steak was more "masculine" than chicken, it was inferred that beef and in particular, beef steak, would have a higher potency score than chicken. However this was not the case, and both chicken and turkey had higher potency scores than many of the beef cuts. The ground and processed meats generally had the poorest potency scores, indicating a weak image for these products. This was largely influenced by the unrealistic interpretation of nutritive value. The nutritive value of meats and processing practices in the meat industry appear to lack consumer understanding and confidence.

The activity factors included the "quick", "versatile" and "picnic" constructs. Activity is described by "fast - slow", "alive - dead", "young - old" adjectival pairs (Heise, 1970). In relation to meat, this was interpreted as time required for preparation; its versatility, as reflected by the number of ways it could be prepared; and its use during different seasons of the year.

The "quick" construct referred to the time required for preparation for a meal. The time required to prepare meats was not related to their acceptability. This did not necessarily contradict the increased consumer demand for convenience, but rather indicated that





some fresh meats were accepted as requiring long cooking periods. Broiling steak was the only highly acceptable meat, which was also judged as being quick to prepare. Although this construct was not correlated with acceptability, it may be more important to specific segments of consumers, such as housewives working outside the home. Bacon, cold cuts, and wieners, which were judged highly acceptable on the "would buy" construct, but not on overall acceptability scores, were "quick" and more suitable for lunches and breakfasts than dinners. They had unfavourable scores on the "fat", "nutrition", and "guests" constructs but they were acceptable where these factors were not related to acceptability.

The versatility construct was designed to measure knowledge of different cooking methods of the meat cuts. Ground beef, stew beef, and chicken were characterized as being versatile (Table 22, p. 86). None of the meat cuts studied were scored as entirely lacking in versatility. Versatility was not highly correlated with acceptability, because some highly acceptable meats were cooked by a limited number of methods e.g. broiling steak, bacon, turkey. A common complaint of retailers (McFadyen, Stiles and Hawkins, 1972) was that consumers lacked knowledge of ways to prepare meats. Consumers are not likely to accept a meat if they do not know how to cook it satisfactorily. Favourably remembered experiences with food items have been found to be the most important influence on the evaluation of some foods (Myers and Reynolds, 1967).

The modification of flavour, colour, and/or texture of products by adding ingredients, or using them in different combinations has been effective in increasing the appeal of a product. Chocolate milk, cereals



with added fruits and flavoured yoghurt are examples of foods with wider appeal through such modifications. Meat products are unique in that they are most commonly offered to the consumer in the "raw" form. Thus these modifications are left to the consumer. The meats which were considered prestigious, such as steak and even beef roast, have high "ego" involvement (Myers and Reynolds, 1967) and interest in these meats depends on image rather than familiarity. The other meats with low versatility scores require familiarity to improve their acceptability. Information on cooking methods for these meats could improve their acceptability.

The "picnic" construct was a measure of the effect of season on meat usage. This was revealed as a factor differentiating meats in the repertory grid survey, and was of interest to the study. None of the meat cuts studied were characterized as being especially suited for specific seasonal use. Most meats had a median score of 3, indicating suitability for both winter and summer, or that respondents had no opinion about the seasonal use of the meats. Cold cuts and wieners, turkey and stew beef were the only meats that did not have a median score of 3. Cold cuts and wieners were considered slightly more suited for summer use, while turkey and stew beef were slightly more suited for winter use. This does not agree with the strong feelings about seasonal use (demand) expressed by meat retailers (McFadyen et al., 1972). However, the retailer study indicated that seasonal demands were more likely determined by the meat packers and retailers than by consumer preferences.

The activity dimension of meats was far more difficult to interpret than either the evaluative or potency dimensions. The



difficulty probably lies in the appropriateness of classifying these constructs in the activity dimension. Ground beef had the highest score for the activity dimension. This would account for its relatively high acceptance, despite its lack of potency. It appeared that for meats with a low potency, such as beef sausage, their promotion might be directed toward versatility (activity), rather than potency factors. Beef sausage, wieners and bacon which were scored with low evaluative and potency scores had better activity scores, confirming this alternative approach to promotion.

The U. S. D. A. study (Weidenhamer et al., 1969) reported that assurance of good quality was the most important factor considered by consumers in making meat purchases. In this study, the potency factors might be considered the most important, based on the fact that the meats with the highest potency scores were those with the highest overall acceptability scores (Table 22, p. 86). "Quality" was not defined in the U. S. D. A. study, and was probably a complex concept involving many factors of acceptability. This was an obvious defect in that study, and limited the interpretations that could be made. This study concentrated on consumer concepts. The constructs are interrelated and, although factor analysis would have allowed objective classification of the constructs into the three dimensions of attitude, the ordinal character of the data is theoretically not amenable to factor analysis (Siegel, 1956; Nie et al., 1970). It was considered undesirable to rank the relative importance of the constructs because acceptability of meats appeared to depend on the interrelationship of more than one factor. Although the evaluative dimension was closely related to acceptability,



this did not account for the prestige of the meats and meat cuts. The change in attitude to the meats between the 3 dimensions of attitude, indicated that the meats were viewed differently depending on their intended use. This differentiation should be recognized in meat marketing and promotion. Meats should be differentiated on the basis of usage, in addition to differentiation on the basis of their commodity group.

### Meat Attitudes

The meat cuts which ranked as the most acceptable on the overall acceptability scores (Table 37, p. 111) had response frequency patterns which were different from those for the less acceptable meat cuts. The responses toward highly acceptable meat cuts were unidirectional and more pronounced, than responses for the less acceptable meat cuts. This indicated that respondents were more familiar with the highly acceptable meat cuts, and that opinions were consistent between respondents. The responses for less acceptable meat cuts were divided between favourable and unfavourable responses, with many scored in the "no opinion" category. This indicated conflicting opinions or lack of opinion about the constructs for these meat cuts. These meats, therefore, were not characterized by favourable or unfavourable images, which would need to be changed to improve their acceptability.

The only factor of acceptability that characterized the less acceptable meat cuts was their lack of suitability for guests. Chuck steak, stew beef and pot roast of beef were frequently scored unfavourably for "tenderness" and "guests"; ground beef for "fat" and





"guests"; beef sausage for "fat", "waste", "nutrition" and "guests"; and liver for "guests". The lack of suitability for guests would be expected, and the other unfavourable factors must be viewed as part of the image of these cuts. To promote these meat cuts, the factors that were favourably scored should be emphasized, rather than trying to change the unfavourable aspects of the image (Myers and Reynolds, 1967).

There were many differences in the response patterns and image profiles between beef cuts. Individual beef cuts were frequently more closely related to other meats, than to the other beef cuts. Beef cuts which ranked poorly on the "would buy" construct, such as fresh beef sausage and chuck steak, generally ranked poorly for other factors of acceptability. This was not always the case for other meats, as shown by bacon and wieners. Both bacon and wieners were highly acceptable on the "would buy" construct, yet they lacked the characteristics of a highly acceptable meat. This indicated that these meats were acceptable as a different kind of meat, and the positive scores for "quick" and "tender", and their suitability for lunches, indicated that they had different factors governing their acceptability.

#### Reasons for Beef Preferences

About half of the Canadian per capita meat consumption is beef (Richter, 1971). This can be explained by five major factors, which influence the proportion of total product sales, for different brands of a product: (1) relative brand prices, (2) proportion of display space allocated to each brand, (3) quality of the display space, (4) point of sale advertising and promotion, and (5) consumer attitudes



and preferences (Padberg, Walker and Kepner, 1967). Although fresh meats are not brand products, the widely varying image profiles of different cuts indicated that cuts were perceived in the same way as brands of other food products. Beef has the largest "line" of products with a full range of prices. The proportion of display space allocated to individual beef cuts is comparable to that of other meat cuts. Because of the larger variety of beef cuts, the combined space allocated to beef is more than that for the other meat types. The quality of the beef display space is comparable to that of other fresh meats, and point of sale advertising and promotion of most meats is limited. Only consumer attitudes and preferences for meats are not clearly understood.

Frequent reference is made to the prestigious position that beef commands in the meat market place. This study indicated that broiling steaks and oven beef roast were probably the only two meat cuts characterized by prestige. The prestige value of beef cuts, measured by the "guests" construct, was correlated with expense. However, chicken, turkey and ham, were rated as suitable for guests despite their lower price.

Beef cuts generally ranked higher than most other meat cuts for measures of potency - "nutrition", "guests" and "lunch". However, this generalization could not be applied to all beef cuts. It appeared that the variety of products of beef might be the main reason for the large per capita consumption of beef. When the consumption figures for different parts of the beef carcass are compared to those for other meats, this fact becomes apparent. Table 45 gives the weekly average quantity of some of the meat cuts consumed per family for urban centres on the



Table 45. Weekly average quantity of some meat cuts consumed per family for urban<sup>1</sup> centres on the Prairies and in British Columbia.

Meat	Cut	Pounds consumed per family per week	
		<u>Prairies</u>	<u>British Columbia</u>
Beef	Loin	.42	.46
	Round	.52	.39
	Rib cuts	.36	.37
	Shoulder	.36	.28
	Flank	.07	.06
	Stewing	.11	.13
	Hamburger	.95	.76
Pork	Bacon	.46	.38
	Picnic roll	.42	.26
	Ham	.05	.17
	Fresh loin	.47	.42
	Fresh ham	.04	.01
	Shoulder	.16	.13
	Sausage	.25	.22
Others	Lamb	.10	.16
	Liver	.15	.13
	Wieners	.41	.30
	Chicken	1.06	1.19
	Turkey	.55	.52

<sup>1</sup>Cities of >30,000 population.



Prairies and in British Columbia (Statistics Canada, 1971). This indicated the effect of price on buying behaviour and gave a more realistic comparison than figures comparing only meat types. All beef cuts were not included and the totals did not reflect the total proportion of meat consumption made up of beef.

### Grades in Relation to Consumer Preferences

Beef grades have not reflected consumer preferences, and have not been used by consumers to differentiate or identify their beef preferences. The limited availability of grades, other than red and blue, and the limited consumer knowledge of grades, have contributed to this situation. From this study, it appeared that many of the criteria of acceptability of meats were not identifiable by methods suitable for grading. These characteristics were associated with different meat cuts, similar to brand images in other products. Fat content was the only identifiable quantity, which would be useful to consumers in identifying preferred meats. However, studies have shown that consumers did not judge visible fat content accurately (Brayshaw et al., 1967). The fat content of some beef cuts such as ground beef and sausages, could be controlled and could be incorporated into labelling. Ground beef has an image of being fatty, and fat content information on the label would be an asset to the consumer, and to the beef industry. This would reassure consumers of the fat content and assist in regaining consumer confidence in meats.

Grades cannot identify nutritive value or suitability for





guests, but do indicate relative tenderness between grades. However, with the prevailing retailing system, between-cut rather than between-grade tenderness differences are important. Grading and retailing methods do not indicate these differences. As a result, beef grades are unimportant in beef retailing except for the guarantee of "quality" of meat sold by the store. Grades are frequently used in the promotion of beef by retail stores, and are promoting the store, not beef.

### Future Beef Marketing

In product promotion, the future consumers and their environment must be considered. According to the predictions of Dichter (1969), Tobolski (1969), and Ryan (1969 and 1970), the increase in discretionary spending is one of the most important factors, which will affect marketing in the next ten years. A second basic change which is predicted, is a shift in the age distribution of the population. In the U. S. A., half of the population will be under thirty. There will be a similar trend in Canada and it is predicted that the "young" market will spend their money differently when compared to their parents. The differences between the attitudes of different age groups to meats was indicated in this study.

In foods, it is predicted that consumers will look for variety, sophistication, and satisfaction of immaterial needs. Convenience will be taken for granted, as well as nutrition, texture, and flavour. The food industry is making progress toward this, and the beef industry could feel the pressure of standardized, fabricated, competitive products in the future.



Although most of these predictions are made with reference to the American market, Lucas (1966, p. 31) said of the Canadian consumer, that:

"his tastes and expenditures are not all like our own (American), but the differences seem more like regional variations than the contrasts between two different nations and cultures. And averages mean very little in Canada with its two highly different ethnic populations, each trying harder to be different from each other than to be different from other Americans."

Unless there are some changes in Canadian attitudes toward America, and in the two cultures predominating in Canada, the changes in American attitudes will probably be indicative of the changes in Canadian attitudes.

As the market becomes more dominated by discretionary spending, the attitudes of consumers assume an increasingly important role (Lucas, 1966, p. 31). Successful advertising, promotion and product development depend on an understanding of consumer attitudes.

Advertising of agricultural commodities is most successful, according to Kohls (1961), when a favourable demand trend is already underway and the product is differentiated from potential substitutes by indeterminate qualities. There should also be substantial sums of money available for advertising, powerful emotional buying motives, and co-ordination with selling activities and supply flow. The Alberta beef industry appears to be in a good position in all of these regards. The demand for beef is increasing and the industry is interested in further increases. There are powerful emotional factors involved in the demand for beef in the Canadian culture. However, the beef industry was shown to be heavily segmented (McFadyen et al., 1972), with little



communication between producer, packer, retailer and consumer. As a result, there is little coordination between production and selling activities, and unreliable supply flow was one of the principle complaints of retailers regarding beef supplies (McFadyen et al., 1972). Although the beef industry would appear to be favourably poised to benefit from promotion, the present lack of communication within the industry, and the need for consumer education and confidence in the product, require attention before the products can be effectively promoted, or acceptable new products can be developed.

#### Achievement of Objectives

The objectives of this study were to obtain information about consumer attitudes and opinions of meats, which would provide a basis for promotion, consumer education and product development. The data was analyzed to give information about beef, relative to the other meats. The information obtained should provide a basis for promotion and education, where appropriate aspects of attitudes could be emphasized. The study provides insight into consumer concepts of the factors important to acceptability, such as fat, nutrition, tenderness and waste. The U. S. D. A. study (Weidenhamer et al., 1969) measured prestige by the "suitability for serving to guests". In this study, it was shown that this construct could not be assumed to measure prestige. The study has shown a need for product development. This would be reflected not only in a need for new products, but also a need to recognize consumer concepts of individual beef cuts, as products. The greatest potential for product development would appear to be in the



area of versatile meat products, especially suited to small meal usage.





## CONCLUSIONS

The attitudes toward beef, with the greatest potential for effective promotion, are those factors of potency related to acceptability (nutritive value, suitability for serving to guests and suitability for dinner). The activity dimension of attitude is not important in the prestigious aspects of beef. However, the activity dimension is important in the more versatile beef cuts (those suitable for lunch and dinner use, such as ground beef and beef sausage). The versatile beef cuts generally lack potency, hence their promotion should rely on activity factors.

The consumer's concept of nutritive value requires careful interpretation. Consumers perceive "nutritional" differences, where in strict nutritional terms, only small differences, if any, exist.

The nutrition opinions indicate concern of the consumer for healthfulness. Consumers express their concern for healthfulness in terms of the fat content of meats and degree of meat processing. The relationship between nutritive value and preconceived image of fat content emphasizes the importance of understanding consumer attitudes, before undertaking product promotion. If the beef industry wishes to maintain and improve its consumer image, factual information on the "healthfulness" of beef must be made available to the consumer in a credible and meaningful form.

The evaluative dimensions of attitude have less potential for use in promotion based on emotional appeal, but they are suitable for



use in consumer education. Favourable images of tenderness can be used in promotion. If the image is unfavourable, educational promotion based on cooking information to maximize consumer satisfaction is required. The images of fattiness are largely preconceived. Fattiness tends to relate to nutrition, and therefore becomes more important as a potency than an evaluative factor in meats. However, amount of fat remains an important evaluative characteristic, and information on fat content could promote consumer confidence in meats. The meaning of waste in meats is not clearly shown by this study. The involvement of the image of fattiness in the assessment of waste requires further investigation. The importance of packaging in the acceptability of fresh meats should be further studied to determine the need for improvements.

The small, inconsistent differences in attitudes and opinions between the cities and socioeconomic groups studied indicate that separate promotions or educational programs on these bases are not necessary. Age effect, however, requires consideration in meat promotion. The more favourable attitude of younger consumers toward the expense of meats could have important implications for the beef industry in the future.

The consumer opinions indicate that some beef cuts, poultry and ham are the most acceptable meats. However, only the broiling steaks and oven beef roast have prestige value. Compared to pork, beef cuts generally have preferential acceptability. Lamb appears to be the least acceptable meat, but this low level of acceptability results from lack of familiarity, rather than unfavourable attitudes



and opinions.

Many of the opinions about meats are based on misinterpretations of facts and lack of sound information. The consumer images of many meats could be improved by promotion and education. The apparent preferential position of beef is largely dictated by the availability of a large number of cuts, at a wide range of prices. The equivalent demands for beef and poultry at take-out restaurants is indicative of this, and comparisons between beef cuts and other meats or meat cuts would be a more meaningful measure of relative preferences for beef.

The promotion and marketing of beef should be based on beef cuts, because consumers perceive the beef cuts as separate products. The failure of the beef industry to recognise this is an indication of their production orientation. Marketing with consumer orientation, on the basis of beef cuts as separate products, would allow the favourable aspects of attitude toward these cuts to be used more effectively for their promotion.

The relative lack of beef products with an image of versatility indicates the potential for product development. Convenient and versatile beef products are lacking, and represent the greatest potential for product development. Prerequisite to product development is an improved acceptance of processed beef products by consumers.

In most respects the beef industry is favourably poised for the advertising and promotion of its products. Exceptions to this are the lack of communication that prevails within the industry, and the need for consumer education that will promote confidence in processed products.



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## APPENDIX A

## CONSTRUCT DEVELOPMENT SURVEY

ADDRESS \_\_\_\_\_ SAMPLE NO. \_\_\_\_\_  
 TELEPHONE NO. \_\_\_\_\_ AREA VAN \_\_\_\_\_  
 DATE \_\_\_\_\_ EDM \_\_\_\_\_  
 INTERVIEWER \_\_\_\_\_ CAL \_\_\_\_\_

HELLO . . . . . I'm doing a consumer opinion survey for  
 the University. I would like to ask a few questions of the homemaker  
 (your mother, wife, etc.)

If meat is not eaten in the household, record the reason and discontinue.

religion \_\_\_\_\_

health \_\_\_\_\_

other (specify) \_\_\_\_\_

If the respondent refuses to answer the questionnaire, record the reason  
 given. If the reason given differs from the apparent reason or excuse,  
 also record the apparent reason.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

1. Do you buy most of your fresh meat in

bulk . . . . . \_\_\_\_\_

retail cuts. . . . . \_\_\_\_\_

2. Do you buy meat at

supermarket. . . . . \_\_\_\_\_

butcher. . . . . \_\_\_\_\_

other (specify). . . . . \_\_\_\_\_



SAMPLE NO. \_\_\_\_\_  
AREA VAN \_\_\_\_\_  
EDM \_\_\_\_\_  
CAL \_\_\_\_\_

3. Do you freeze the fresh meat which you buy

never. . . . . \_\_\_\_\_  
often. . . . . \_\_\_\_\_  
always . . . . . \_\_\_\_\_  
beef but not pork. \_\_\_\_\_

4. In an average week, how many times do you serve

	<u>0</u>	<u>1-2</u>	<u>3-5</u>	<u>&gt; 5</u>
pork	_____	_____	_____	_____
beef	_____	_____	_____	_____
lamb	_____	_____	_____	_____
poultry	_____	_____	_____	_____
other meat	_____	_____	_____	_____

"These cards contain the names of meats which we are studying. Please look through the cards and discard any containing the names of meats with which you are totally unfamiliar."

INTERVIEWER

1. List the cards discarded by number.
2. Draw lines through these meats on the grid.
3. Turn remaining cards face down and mix them thoroughly.



## Appendix A

SAMPLE NO. \_\_\_\_\_  
AREA    VAN \_\_\_\_\_  
         EDM \_\_\_\_\_  
         CAL \_\_\_\_\_

"To discover your ideas about these meats, I'd like you to choose three cards and tell me one way in which two of the meats chosen differ from the third.

For example, if the cards contained names of household appliances and you drew the names: Television, Stove and Refrigerator, you might separate them by saying the stove and refrigerator are most often used in the kitchen whereas the television is not most often used in the kitchen.

Then, when you have decided how any two meats differ from the third, I would like you to separate the meats on the remaining cards into those which are like the first two meats and those which are like the third meat. Tell me the numbers which are on the cards with the names of the meats in each group."

INTERVIEWER

When respondent has classified the meats, record both dimensions of the construct, (positive aspect first, negative second) and record + or - respectively for the meats. Repeat the random choice of three cards and classification according to each construct until respondent cannot think of any more constructs.









## Appendix A

SAMPLE NO. \_\_\_\_\_

AREA VAN \_\_\_\_\_

EDM \_\_\_\_\_

CAL \_\_\_\_\_

+ CONSTRUCTS -

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

5. How many people are there in your household who eat their meals here?

\_\_\_\_\_

6. Approximately how many meals do these people buy outside the home in a month?

FATHER \_\_\_\_\_ WIFE \_\_\_\_\_ CHILDREN \_\_\_\_\_ OTHERS \_\_\_\_\_

WHOLE HOUSEHOLD \_\_\_\_\_



SAMPLE NO. \_\_\_\_\_

AREA VAN \_\_\_\_\_

EDM \_\_\_\_\_

CAL \_\_\_\_\_

7. How many of these people are: under 6 years old \_\_\_\_\_  
7 - 12 years old \_\_\_\_\_  
13 - 17 years old \_\_\_\_\_  
18 - 23 years old \_\_\_\_\_  
24 - 64 years old \_\_\_\_\_  
over 64 years \_\_\_\_\_
8. Are you employed outside the home? (If respondent is not the housewife, "Is the housewife employed outside the home?")  
FULL TIME \_\_\_\_\_ PART TIME \_\_\_\_\_ NO \_\_\_\_\_
9. What is the occupation of the main wage earner in this household?  
(be specific) \_\_\_\_\_
10. How long have you lived in Canada: less than 5 years \_\_\_\_\_  
5 - 9 years \_\_\_\_\_  
10 - 15 years \_\_\_\_\_  
16 - 20 years \_\_\_\_\_  
all your life \_\_\_\_\_
11. What country did you live in before coming to Canada?  
France \_\_\_\_\_  
Germany \_\_\_\_\_  
Great Britain \_\_\_\_\_  
Hungary \_\_\_\_\_  
Italy \_\_\_\_\_  
Other (specify) \_\_\_\_\_



SAMPLE NO. \_\_\_\_\_

AREA VAN \_\_\_\_\_

EDM \_\_\_\_\_

CAL \_\_\_\_\_

\_\_\_\_\_

## INTERVIEWER

Hand respondent Sheet A and ask her to mark:

Into which age group you fall, as of your last birthday?

Into which group does the total income of all wage earners in your family fall in 1970?

MARK R if refused and DON'T KNOW if respondent doesn't know income.

INTERVIEWER'S COMMENTS:





## Appendix A

SAMPLE NO. \_\_\_\_\_  
AREA    VAN \_\_\_\_\_  
         EDM \_\_\_\_\_  
         CAL \_\_\_\_\_

SHEET A

12. Please indicate the age group in which you are as of your last birthday?

under 25 years \_\_\_\_\_  
26 - 35 years \_\_\_\_\_  
36 - 45 years \_\_\_\_\_  
46 - 55 years \_\_\_\_\_  
56 - 65 years \_\_\_\_\_  
over 65 years \_\_\_\_\_

13. Please indicate in which of these groups the total income of all wage earners in your family fell in 1970.

under \$3,000 \_\_\_\_\_  
\$3,000 - \$4,999 \_\_\_\_\_  
\$5,000 - \$6,999 \_\_\_\_\_  
\$7,000 - \$9,999 \_\_\_\_\_  
\$10,000 - \$14,999 \_\_\_\_\_  
over \$15,000 \_\_\_\_\_

14. What is the highest level of school which you and your husband completed?



## Appendix A

SAMPLE NO. \_\_\_\_\_

AREA VAN \_\_\_\_\_

EDM \_\_\_\_\_

CAL \_\_\_\_\_

	<u>You</u>	<u>Husband</u>
No formal schooling	_____	_____
Some public schooling (grades 1-6)	_____	_____
Completed Grade 6	_____	_____
Some High School	_____	_____
Completed High School	_____	_____
Some Post-High School (Vocational training, University)	_____	_____
Completed Post-High School Course other than University	_____	_____
Completed University course	_____	_____



APPENDIX B

## Categorized Constructs Obtained from the Repertory Grid Survey.

## 1. Relevant, single idea constructs

Expressions of:

- (a) time required for preparation
- (b) suitability for seasonal cooking
- (c) (i) versatility
- (c) (ii) specific aspects of versatility
- (d) nutritive value
- (e) prestige
- (f) fat content
- (g) expense
- (h) suitability for main meal
- (j) versatility of left-overs
- (k) tenderness
- (l) waste
- (m) popularity
- (n) suitability for meal-in-a-dish
- (o) suitability for large groups

## 2. Denotative constructs

## 3. Constructs specific to individuals

## 4. Complex constructs (constructs with impure or variable meanings).

Numbers in parentheses after the expressions indicate the number of times that the identical expression was recorded for each centre.



## 1. Single Idea Constructs

(a) Expressions of Time Required for PreparationCALGARY

Take long time to cook - fast to cook

Long time required to cook - faster to cook

Less quick - quick to prepare

More preparation required - little preparation required

EDMONTON

Takes longer to prepare - quick preparation time

Cook slowly - cook not as slowly

More 'pre' preparation - less 'pre' preparation

VANCOUVER

Not so quick to cook - quick to cook

More planning for meal - quick meals

Takes long time to cook - less time

Take long to cook - don't take long to cook

Not necessarily quick - quick to cook

Long cooking - not so long

Long cooking time - short cooking time

(b) Expressions of Suitability for Seasonal CookingCALGARY

Good for picnics (outdoor meals) - more indoor

Eat out (picnics) - eat at home

Good for barbecuing - not so good for barbecuing

EDMONTON

Barbecuing - not barbecuing





## Appendix B

Picnic meat - not likely for picnics

Can be barbecued - can't be barbecued

Used for outdoor meals - used indoors

Able to be barbecued - not generally barbecued

Used for barbecue - not used

Used more in summer - used at others times just as much

Associate with outdoor meals - indoor

Take camping - not likely to take camping

VANCOUVER

Can't barbecue - can barbecue

(c) (i) Expressions of Versatility

CALGARY

Less variety of preparation - more variety of preparation

Less variety - variety of preparation

No variety - variety of cooking methods

Less variety - variety of preparations (3)

Not too versatile - versatile

EDMONTON

Less variety - variety of preparation (3)

Little variety - has variety of preparations

No variety - variety of cooking methods

Less versatile - versatile

VANCOUVER

Not too much variety of uses - more variety of uses

One meal - more than one meal (variety)

Not good for cooking variety - good for cooking variety



Not so many varieties - variety of uses

(c) (ii) Expressions of Specific Aspects of Versatility

CALGARY

Can't make a casserole - can make a casserole (2)

Can't make a gravy - can make a gravy

Can't be stuffed - can be stuffed

Not for sandwiches - for sandwiches (3)

Wouldn't broil - would broil

Oven roasted - cooked on top of stove (2)

Fry - not to fry (2)

Used for soups - not used for soups

EDMONTON

Roast - don't roast (3)

Can be baked - can't be baked

Able to be grilled - not grilled

Able to eat cold - must eat hot

Used in sandwiches - not used in sandwiches (3)

Cooked in oven - not cooked in oven (4)

Broil - not broiled

Used for stews - not used for stews

Served hot - may be served cold

VANCOUVER

Would roast - not most likely roast

Fry - don't fry (3)

Roast - wouldn't roast

Can be fried - can't be fried



Would bread - wouldn't bread

Would cook with tomatoes - wouldn't cook with tomatoes

(d) Expressions of Nutritive Value

CALGARY

Not healthful - healthful

Not good for special diets - good for special diets

Less nutritious - very nutritious

Less nutritious - most nutritious

Less nutritious - nutritious (2)

Not healthful - most healthful

EDMONTON

Less nutritious - more nutritious (3)

VANCOUVER

Food value not too good - food value good

Not good for husband's health - good for husband's health

Not so nutritious (Don't know what's in them) - good for you

Not so good meats - good meats

Not so nutritious - nutritious

(e) Expressions of Prestige

CALGARY

Not for holiday times - holiday fare

Wouldn't serve to special guests - would serve to special guests

Wouldn't serve guests - could make meal for guests

More a family meal - serve to company

Ordinary meals - holiday meals



EDMONTON

Less special - used for special occasions

VANCOUVER

Wouldn't serve to company - would serve to company (2)

Plebeian - prestigious

Family meal - for company

Regular meal - variety once in a while

Not Sunday - Sunday dinner

Not company - company

Not luxury - luxury

(f) Expressions of Fat Content

CALGARY

Rich and greasy - not greasy

Hard to digest - not hard to digest

Fatty - not fatty (2)

Not so lean - lean

Fatty - not so fatty (2)

EDMONTON

Much fat - not too much fat (2)

Fatty meat - not fatty

Fatty - not fatty

More fatty - less fatty

VANCOUVER

Too fatty - not too fatty

Fatty - not as fatty (dry)

Not low - low in calories





## Appendix B

Much fat - not so much fat

Not so low fat - low fat

(g) Expressions of Expense

CALGARY

Expensive - not expensive

Expensive - less expensive (5)

More expensive - less expensive

Not cheap - cheap

Expensive - not too expensive

Expensive - cheaper

More expensive - not expensive

Expensive - not too expensive

EDMONTON

Expensive - less expensive (6)

Expensive - not as expensive (2)

More expensive - less expensive

Expensive - not expensive

VANCOUVER

Expensive - less expensive

Expensive - not too expensive (2)

Expensive - not expensive (2)

Expensive - not especially expensive

Expensive meat - not as expensive (4)

Expensive - cheap (2)

More expensive than chops - cheapest

Expensive - inexpensive



Not cheap per serving - cheap per serving

Expensive - inexpensive

(h) Expressions of Suitability for Main Meal

CALGARY

Sandwiches and lunches - not for sandwiches and lunches

Serve for lunch - serve for main meal

Breakfast meat - not breakfast meat

More a breakfast meat - not for breakfast

For a lunch - for a meal

Would serve for breakfast - wouldn't serve for breakfast

Lunch or lighter meal - main meal

Breakfast meat - not usually breakfast

Used as supplement - used as main meal

Lunch meat - main dinner meal

Less important meal - big meal

EDMONTON

Luncheon type meat - not luncheon type meat

Not dinner meat - dinner meat

Not likely main course - main course meat

Breakfast food - not breakfast food

Breakfast meal - not breakfast

Used for lunches - used for main meals

Luncheon type meal - dinner-type meal

VANCOUVER

Good for lunches - not good for lunches

Quick lunches - not so quick lunches



## Appendix B

Lunches - not for lunch

Breakfast - not especially

Breakfast - not necessarily breakfast

Lunch, brunchy - dinner meat

For any meal - not for any meal

Not main meal - main meal

Not for breakfast - breakfast

Not dinner - dinner

Breakfast - not for breakfast

(j) Expressions of Tenderness

CALGARY

Tougher - less tough

Tough - tender

EDMONTON

Not so tender - tender

Less tender - tender

VANCOUVER

Less tender - more tender

(k) Expressions of Waste

CALGARY

More waste - little waste

EDMONTON

More waste - less waste

Much waste - not too much waste

VANCOUVER

High waste - low waste



Much waste - not too much waste

Much waste - not so much waste

(1) Expressions of Suitability for Large Groups

CALGARY

Suitable for large groups - not especially suitable for large  
groups

Used for entertaining large groups - not used for large groups

EDMONTON

Used for large groups - not used for large groups

VANCOUVER

Serves large groups - doesn't serve large groups

Would buy for large number of people - wouldn't buy for large  
number of people

(m) Expression of Popularity

CALGARY

Popular - not popular

Most people like - not well-liked

Like - dislike

EDMONTON

Like - dislike (2)

Not as likely to buy - most likely buy

VANCOUVER

Like - dislike (5)

Don't buy often - do buy often (3)

(n) Expression of Suitability for Meal-in-a-dish

CALGARY





## Appendix B

Make a whole meal - doesn't (just meat)

EDMONTON

Served alone - served with something else

Meal in one dish - more than one dish

One dish meal - used in combination

VANCOUVER

Meal in a dish - only as meat

(o) Expressions of Versatility of LeftoversCALGARY

None

EDMONTON

Can't use leftovers - can do things with leftovers

VANCOUVER

Can be used as basis for more than one meal - can't be used for  
more than one meal

Will make many meals from one lot - makes only one meal

## 2. Denotative Constructs

CALGARY

Smoked - not smoked

Smoked - fresh

Pork - not pork

beef - not beef

Always available - seasonal (2)

EDMONTON

Cook before eating - don't cook



Poultry - not poultry

Comes in package with brand name - doesn't have brand name

Comes frozen - doesn't often come frozen

Always cooked - uncooked

Require no cooking - need cooking

Processed meat - not processed

Smoked product - fresh product

True meats - poultry

Eat with white wine - don't eat with white wine

#### VANCOUVER

Birds - not birds

Beef - not beef (3)

Pork - not pork (2)

Preserved - not preserved

From pigs - not from pigs

Could be from beef - not from beef

Not organ meat - could be organ meat (2)

Has bone - doesn't have bone

Ground - not ground

Ground and pressed - whole and solid

Have cooked - haven't cooked

Cured - fresh

### 3. Constructs Peculiar to Individuals

#### CALGARY

Good flavour- don't like flavour



Taste better - don't like

Variety meat - basis of regular meals

#### EDMONTON

Don't buy frequently - buy frequently

Used for stuffing ravioli - not used for stuffing ravioli

Tire of quickly - don't tire of quickly

#### VANCOUVER

Whole family likes - not liked by all

Breadwinner likes - breadwinner dislikes

Children like - children don't like

Husband takes to work cold - wouldn't take

Appetizing - not especially appetizing

Don't like the smell - don't mind

Don't eat - eat because of good flavour

Don't buy these - would buy these

#### 4. Complex Constructs (Constructs with Impure or Variable Meanings)

#### CALGARY

Made from packing plant leftovers - solid meat

Better quality - less quality

More economical - less economical

Several meals (can't undo preparation) - require more preparation

Keeps well in refrigerator - spoils easily

Less easy to prepare - easy to prepare

Strong flavour - bland

#### EDMONTON

Especially for kids (all purpose) - kids not so much



Snack food - not snack food

Cook uncovered - cook covered

Use moist heat - use dry heat (3)

Must be well-done - not necessarily well-done

#### VANCOUVER

Easy to prepare - not so easy

Dislike ingredients - no ingredients dislike

Eat cold - don't eat cold

Easy to prepare - not too easy to prepare

Would cook in water - wouldn't

Sure of contents - not sure of contents

Good quality - not as good quality

Eat hot - don't have to





## APPENDIX C

## SEMANTIC DIFFERENTIAL ATTITUDE SURVEY

## BEEF ATTITUDE SURVEY

SCHOOL OF HOUSEHOLD ECONOMICS

UNIVERSITY OF ALBERTA

Sample \_\_\_\_\_

Interviewer \_\_\_\_\_

Date \_\_\_\_\_

Address \_\_\_\_\_

Tel. No. \_\_\_\_\_

If meat is not eaten in the household, record the reason and  
discontinue interview.

religion \_\_\_\_\_

health \_\_\_\_\_

other (specify) \_\_\_\_\_

If the respondent refuses to answer the questionnaire, record the  
reason. If the reason given differs from the apparent reason or  
excuse, also record the apparent reason.

\_\_\_\_\_

\_\_\_\_\_

1. Do you usually buy..... BEEF in bulk? \_\_\_\_\_  
in retail cuts? \_\_\_\_\_  
don't buy? \_\_\_\_\_
- ..... PORK in bulk? \_\_\_\_\_  
in retail cuts? \_\_\_\_\_  
don't buy? \_\_\_\_\_

2. Do you buy most of your meat at .... BUTCHER (specify)
- \_\_\_\_\_

..... SUPERMARKET

Safeway \_\_\_\_\_

IGA \_\_\_\_\_

Super Valu \_\_\_\_\_

Woodward's \_\_\_\_\_

Discount (specify) \_\_\_\_\_

Other (specify) \_\_\_\_\_



## Appendix C

Sample \_\_\_\_\_

3. Do you freeze the fresh meat which you buy

NEVER \_\_\_\_\_  
 OCCASIONALLY \_\_\_\_\_  
 MOST OF THE TIME \_\_\_\_\_  
 ALWAYS \_\_\_\_\_

4. (a) Which of the following  
 meats do you usually buy  
 fresh (as opposed to frozen)?

BEEF..... \_\_\_\_\_  
 PORK..... \_\_\_\_\_  
 POULTRY..... \_\_\_\_\_  
 DOMESTIC LAMB..... \_\_\_\_\_  
 IMPORTED LAMB..... \_\_\_\_\_

(b) If available, which of  
 the following meats would you  
 buy frozen?

BEEF..... \_\_\_\_\_  
 PORK..... \_\_\_\_\_  
 POULTRY..... \_\_\_\_\_  
 DOMESTIC LAMB.. \_\_\_\_\_  
 IMPORTED LAMB.. \_\_\_\_\_

5. In an average week, how many times do you serve . . . .

NEVER OCCASIONALLY FREQUENTLY MOST OF THE TIME  
 (0) (0-2) (3-5) (6 or more)

BEEF	_____	_____	_____	_____
PORK	_____	_____	_____	_____
POULTRY	_____	_____	_____	_____
LAMB	_____	_____	_____	_____
OTHER MEATS	_____	_____	_____	_____
(exclude fish)	_____	_____	_____	_____

6. How many people are there in this household who eat their meals here?

\_\_\_\_\_

7. How many of these people are

under 6 years old? \_\_\_\_\_  
 7 - 12 years old? \_\_\_\_\_  
 13-17 years old? \_\_\_\_\_  
 18-23 years old? \_\_\_\_\_  
 24-64 years old? \_\_\_\_\_  
 65 and over? \_\_\_\_\_

8. How many meals do you and your family buy outside the home in an average month at . . . .RESTAURANTSTAKE-OUT RESTAURANTS

with your children? \_\_\_\_\_

without your children? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## Appendix C

Sample \_\_\_\_\_

9. Which of the following meats would you most likely choose at .....

	<u>RESTAURANTS</u>	<u>TAKE-OUT RESTAURANTS</u>
BEEF	_____	_____
PORK	_____	_____
POULTRY	_____	_____
LAMB	_____	_____
FISH	_____	_____

Which would be your second (third, fourth, and last) choices if your first choice was not available?

10. In what order would you choose these meats, in either a restaurant or a take-out restaurant, for lunches. . .? and for dinners . . .?

	<u>LUNCHES</u>	<u>DINNERS</u>
BEEF	_____	_____
PORK	_____	_____
LAMB	_____	_____
POULTRY	_____	_____
FISH	_____	_____

The remainder of this questionnaire is designed to describe your attitude toward some meats. The questions are about different aspects of your attitudes and include the following ideas.

EXPENSE	COOKING TIME
TENDERNESS	FOOD VALUE
VERSATILITY	WASTE
FATTINESS	DESIRABILITY
PACKAGING	SEASONALITY
SUITABILITY	

The questions are set up as follows:

	EXPENSIVE				INEXPENSIVE
BEEF ROAST	_____	_____	_____	_____	_____
WIENERS	_____	_____	_____	_____	_____

The spaces, from left to right, represent:

- very expensive
- slightly expensive
- neither expensive nor
- inexpensive
- slightly inexpensive
- very inexpensive



Sample \_\_\_\_\_

You mark the space which best describes how expensive or inexpensive you feel each of the meats is in relation to other meats in general. If you have no opinion about a question in relation to a meat listed or do not know the meat, DON'T TRY TO FIGURE OUT WHAT THE RESPONSE SHOULD BE. There are no CORRECT answers ---- only your opinions. Everyone does not consider all of these aspects of meats. You will not have any opinion about some of the aspects. The middle space on all of the questions indicates that you do not consider the meats either  
expensive OR inexpensive  
tough OR tender  
fatty OR lean etc.

Do all of the questions.

Do them quickly. It is your first reaction to the questions which is important. It should take you about one minute to do each page.





Sample \_\_\_\_\_

EXPENSIVE MEAT

INEXPENSIVE MEAT

1	Oven beef roast (cooked uncovered)	_____	_____	_____	_____	_____
16	Ham	_____	_____	_____	_____	_____
7	Liver (beef)	_____	_____	_____	_____	_____
17	Cold cuts (Bologna, salami)	_____	_____	_____	_____	_____
20	Lamb roast	_____	_____	_____	_____	_____
19	Lamb chops	_____	_____	_____	_____	_____
13	Pork chops	_____	_____	_____	_____	_____
18	Wieners	_____	_____	_____	_____	_____
2	Fresh beef sausage	_____	_____	_____	_____	_____
4	Steak (T-bone, Sirloin)	_____	_____	_____	_____	_____
10	Turkey	_____	_____	_____	_____	_____
11	Chicken	_____	_____	_____	_____	_____
6	Stew beef	_____	_____	_____	_____	_____
3	Pot roast of beef (cooked with cover)	_____	_____	_____	_____	_____
9	Chuck steak	_____	_____	_____	_____	_____
12	Fresh pork sausage	_____	_____	_____	_____	_____
15	Bacon (side)	_____	_____	_____	_____	_____
8	Round steak	_____	_____	_____	_____	_____
14	Pork roast	_____	_____	_____	_____	_____
5	Ground beef	_____	_____	_____	_____	_____

Comments:



Sample \_\_\_\_\_

LESS TENDER  
MEATS

VERY TENDER  
MEATS

21	Oven beef roast (cooked uncovered)	_____	_____	_____	_____	_____
36	Ham	_____	_____	_____	_____	_____
27	Liver (beef)	_____	_____	_____	_____	_____
37	Cold cuts (Bologna, salami)	_____	_____	_____	_____	_____
40	Lamb roast	_____	_____	_____	_____	_____
39	Lamb chops	_____	_____	_____	_____	_____
33	Pork chops	_____	_____	_____	_____	_____
38	Wieners	_____	_____	_____	_____	_____
22	Fresh beef sausage	_____	_____	_____	_____	_____
24	Steak (T-bone, Sirloin)	_____	_____	_____	_____	_____
30	Turkey	_____	_____	_____	_____	_____
31	Chicken	_____	_____	_____	_____	_____
26	Stew beef	_____	_____	_____	_____	_____
23	Pot roast of beef (cooked with cover)	_____	_____	_____	_____	_____
29	Chuck steak	_____	_____	_____	_____	_____
32	Fresh pork sausage	_____	_____	_____	_____	_____
28	Round steak	_____	_____	_____	_____	_____
34	Pork roast	_____	_____	_____	_____	_____
25	Ground beef	_____	_____	_____	_____	_____

Comments:



Sample \_\_\_\_\_

YOU WOULDN'T  
LIKELY BUY

YOU WOULD  
LIKELY BUY

50	Turkey	_____	_____	_____	_____	_____
60	Lamb roast	_____	_____	_____	_____	_____
44	Steak (T-bone, Sirloin)	_____	_____	_____	_____	_____
54	Pork roast	_____	_____	_____	_____	_____
51	Chicken	_____	_____	_____	_____	_____
43	Pot roast of beef (cooked with cover)	_____	_____	_____	_____	_____
59	Lamb chops	_____	_____	_____	_____	_____
55	Bacon (side)	_____	_____	_____	_____	_____
41	Oven roast of beef (cooked uncovered)	_____	_____	_____	_____	_____
58	Wieners	_____	_____	_____	_____	_____
42	Fresh beef sausage	_____	_____	_____	_____	_____
49	Chuck steak	_____	_____	_____	_____	_____
52	Fresh pork sausage	_____	_____	_____	_____	_____
48	Round steak	_____	_____	_____	_____	_____
53	Pork chops	_____	_____	_____	_____	_____
56	Ham	_____	_____	_____	_____	_____
47	Liver (beef)	_____	_____	_____	_____	_____
45	Ground beef	_____	_____	_____	_____	_____
46	Stew beef	_____	_____	_____	_____	_____
57	Cold cuts (Bologna, salami)	_____	_____	_____	_____	_____

Comments:



Sample

FATTY

LEAN

70	Turkey	_____	_____	_____	_____	_____
80	Lamb roast	_____	_____	_____	_____	_____
64	Steak (T-bone, Sirloin)	_____	_____	_____	_____	_____
74	Pork roast	_____	_____	_____	_____	_____
71	Chicken	_____	_____	_____	_____	_____
63	Pot roast of beef (cooked with cover)	_____	_____	_____	_____	_____
79	Lamb chops	_____	_____	_____	_____	_____
75	Bacon (side)	_____	_____	_____	_____	_____
61	Oven roast of beef (cooked uncovered)	_____	_____	_____	_____	_____
78	Wieners	_____	_____	_____	_____	_____
62	Fresh beef sausage	_____	_____	_____	_____	_____
69	Chuck steak	_____	_____	_____	_____	_____
72	Fresh pork sausage	_____	_____	_____	_____	_____
68	Round steak	_____	_____	_____	_____	_____
73	Pork chops	_____	_____	_____	_____	_____
76	Ham	_____	_____	_____	_____	_____
67	Liver (beef)	_____	_____	_____	_____	_____
65	Ground beef	_____	_____	_____	_____	_____
66	Stew beef	_____	_____	_____	_____	_____
77	Cold cuts (Bologna, salami)	_____	_____	_____	_____	_____

Comments:





Sample \_\_\_\_\_

REQUIRE LONG  
COOKING OR  
PREPARATION

CAN BE QUICKLY  
PREPARED (COULD USE  
WHEN SHORT OF TIME)

82	Fresh beef sausage	_____	_____	_____	_____	_____
97	Cold cuts (Bologna, salami)	_____	_____	_____	_____	_____
96	Ham	_____	_____	_____	_____	_____
98	Wieners	_____	_____	_____	_____	_____
84	Steak (T-Bone, Sirloin)	_____	_____	_____	_____	_____
89	Chuck steak	_____	_____	_____	_____	_____
91	Chicken	_____	_____	_____	_____	_____
95	Bacon (side)	_____	_____	_____	_____	_____
85	Ground beef	_____	_____	_____	_____	_____
93	Pork chops	_____	_____	_____	_____	_____
83	Pot roast of beef (cooked with cover)	_____	_____	_____	_____	_____
87	Liver (beef)	_____	_____	_____	_____	_____
90	Turkey	_____	_____	_____	_____	_____
100	Lamb roast	_____	_____	_____	_____	_____
86	Stew beef	_____	_____	_____	_____	_____
88	Round steak	_____	_____	_____	_____	_____
92	Fresh pork sausage	_____	_____	_____	_____	_____
99	Lamb chops	_____	_____	_____	_____	_____
81	Oven beef roast (cooked uncovered)	_____	_____	_____	_____	_____
94	Pork roast	_____	_____	_____	_____	_____

Comments:



		Sample _____				
		MEATS OF LOW FOOD VALUE		NUTRITIOUS MEATS (HIGH FOOD VALUE)		
102	Fresh beef sausage	_____	_____	_____	_____	_____
117	Cold cuts (Bologna, salami)	_____	_____	_____	_____	_____
116	Ham	_____	_____	_____	_____	_____
118	Wieners	_____	_____	_____	_____	_____
104	Steak (T-bone, Sirloin)	_____	_____	_____	_____	_____
109	Chuck steak	_____	_____	_____	_____	_____
111	Chicken	_____	_____	_____	_____	_____
115	Bacon (side)	_____	_____	_____	_____	_____
105	Ground beef	_____	_____	_____	_____	_____
113	Pork chops	_____	_____	_____	_____	_____
103	Pot roast of beef (cooked with cover)	_____	_____	_____	_____	_____
107	Liver (beef)	_____	_____	_____	_____	_____
110	Turkey	_____	_____	_____	_____	_____
120	Lamb roast	_____	_____	_____	_____	_____
106	Stew beef	_____	_____	_____	_____	_____
108	Round steak	_____	_____	_____	_____	_____
112	Fresh pork sausage	_____	_____	_____	_____	_____
119	Lamb chops	_____	_____	_____	_____	_____
101	Oven beef roast (cooked uncovered)	_____	_____	_____	_____	_____
114	Pork roast	_____	_____	_____	_____	_____

Comments:



Sample \_\_\_\_\_

CONTAIN MUCH  
WASTE SUCH AS BONE  
AND EXCESS FAT

CONTAIN  
LITTLE  
WASTE

126	Stew beef	_____	_____	_____	_____	_____
139	Lamb chops	_____	_____	_____	_____	_____
129	Chuck steak	_____	_____	_____	_____	_____
138	Wieners	_____	_____	_____	_____	_____
127	Liver (beef)	_____	_____	_____	_____	_____
124	Steak (T-bone, Sirloin)	_____	_____	_____	_____	_____
125	Ground beef	_____	_____	_____	_____	_____
121	Oven beef roast (cooked uncovered)	_____	_____	_____	_____	_____
136	Ham	_____	_____	_____	_____	_____
128	Round steak	_____	_____	_____	_____	_____
140	Lamb roast	_____	_____	_____	_____	_____
135	Bacon (side)	_____	_____	_____	_____	_____
134	Pork roast	_____	_____	_____	_____	_____
122	Fresh beef sausage	_____	_____	_____	_____	_____
123	Pot roast of beef (cooked with cover)	_____	_____	_____	_____	_____
137	Cold cuts (Bologna, salami)	_____	_____	_____	_____	_____
130	Turkey	_____	_____	_____	_____	_____
133	Pork chops	_____	_____	_____	_____	_____
132	Fresh pork sausage	_____	_____	_____	_____	_____
131	Chicken	_____	_____	_____	_____	_____

Comments:



NOT VERSATILE  
(LIMITED NUMBER OF  
WAYS TO COOK)

VERSATILE (CAN  
BE COOKED MANY  
DIFFERENT WAYS)

153	Pork chops					
158	Wieners					
148	Round steak					
151	Chicken					
145	Ground beef					
159	Lamb chops					
146	Stew beef					
141	Oven roast of beef (cooked uncovered)					
152	Fresh pork sausage					
160	Lamb roast					
147	Liver (beef)					
150	Turkey					
144	Steak (T -bone, Sirloin)					
142	Fresh beef sausage					
155	Bacon (side)					
149	Chuck steak					
156	Ham					
157	Cold cuts (Bologna, salami)					
154	Pork roast					
143	Pot roast of beef (cooked with cover)					

Comments:





Sample \_\_\_\_\_

WOULDN'T SERVE TO SPECIAL  
GUESTS (IF ALL MEATS COST  
THE SAME PRICE)

WOULD SERVE TO  
SPECIAL GUESTS IF ALL  
MEATS COST THE SAME PRICE

173	Pork chops	_____	_____	_____	_____	_____
178	Wieners	_____	_____	_____	_____	_____
168	Round steak	_____	_____	_____	_____	_____
171	Chicken	_____	_____	_____	_____	_____
165	Ground beef	_____	_____	_____	_____	_____
179	Lamb chops	_____	_____	_____	_____	_____
166	Stew beef	_____	_____	_____	_____	_____
161	Oven roast of beef (cooked uncovered)	_____	_____	_____	_____	_____
172	Fresh pork sausage	_____	_____	_____	_____	_____
180	Lamb roast	_____	_____	_____	_____	_____
167	Liver (beef)	_____	_____	_____	_____	_____
170	Turkey	_____	_____	_____	_____	_____
164	Steak (T-bone, Sirloin)	_____	_____	_____	_____	_____
162	Fresh beef sausage	_____	_____	_____	_____	_____
175	Bacon (side)	_____	_____	_____	_____	_____
169	Chuck steak	_____	_____	_____	_____	_____
176	Ham	_____	_____	_____	_____	_____
177	Cold cuts (Bologna, salami)	_____	_____	_____	_____	_____
174	Pork roast	_____	_____	_____	_____	_____
163	Pot roast of beef (cooked with cover)	_____	_____	_____	_____	_____

Comments:



## Appendix C

Sample

NOT SATISFACTORILY PACKAGED IN SUPERMARKETS
---

MEATS WHOSE PACKAGING IN SUPER- MARKETS IS GOOD
---

186	Stew beef	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
199	Lamb chops	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
189	Chuck Steak	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
198	Wieners	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
187	Liver (beef)	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
184	Steak (T-bone, Sirloin)	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
185	Ground beef	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
181	Oven beef roast (cooked uncovered)	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
196	Ham	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
188	Round steak	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
200	Lamb roast	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
195	Bacon (side)	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
194	Pork roast	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
182	Fresh beef sausage	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
183	Pot roast of beef (cooked with cover)	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
197	Cold cuts (Bologna, salami)	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
190	Turkey	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
193	Pork chops	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
192	Fresh pork sausage	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
191	Chicken	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

Comments:



USED MORE OFTEN IN SUMMER (PICNICS, CAMPING, BARBEQUING)
---

USED MORE OFTEN IN WINTER
------------------------------

206	Stew beef	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
219	Lamb chops	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
209	Chuck Steak	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
218	Wieners	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
207	Liver (beef)	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
204	Steak (T-bone, Sirloin)	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
205	Ground beef	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
201	Oven beef roast (cooked uncovered)	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
216	Ham	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
208	Round steak	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
220	Lamb roast	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
215	Bacon (side)	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
214	Pork roast	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
202	Fresh beef sausage	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
203	Pot roast of beef (cooked with cover)	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
217	Cold cuts (Bologna, salami)	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
210	Turkey	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
213	Pork chops	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
212	Fresh pork sausage	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
211	Chicken	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>

Comments:



Sample

MORE SUITABLE FOR A LUNCH  
OR BREAKFAST THAN FOR  
A MAIN MEAL

MORE SUITABLE  
FOR A MAIN  
MEAL

222	Fresh beef sausage	_____	_____	_____	_____	_____
237	Cold cuts (Bologna, salami)	_____	_____	_____	_____	_____
236	Ham	_____	_____	_____	_____	_____
238	Wieners	_____	_____	_____	_____	_____
224	Steak (T-bone, Sirloin)	_____	_____	_____	_____	_____
229	Chuck steak	_____	_____	_____	_____	_____
231	Chicken	_____	_____	_____	_____	_____
235	Bacon (side)	_____	_____	_____	_____	_____
225	Ground beef	_____	_____	_____	_____	_____
233	Pork chops	_____	_____	_____	_____	_____
223	Pot roast of beef (cooked with cover)	_____	_____	_____	_____	_____
227	Liver (beef)	_____	_____	_____	_____	_____
230	Turkey	_____	_____	_____	_____	_____
240	Lamb roast	_____	_____	_____	_____	_____
226	Stew beef	_____	_____	_____	_____	_____
228	Round steak	_____	_____	_____	_____	_____
232	Fresh pork sausage	_____	_____	_____	_____	_____
239	Lamb chops	_____	_____	_____	_____	_____
221	Oven beef roast (cooked uncovered)	_____	_____	_____	_____	_____
234	Pork roast	_____	_____	_____	_____	_____

Comments:





Sample \_\_\_\_\_

11. Are you employed outside the home? NO \_\_\_\_\_  
PART-TIME \_\_\_\_\_  
FULL TIME \_\_\_\_\_
12. How long have you lived in Canada? less than 5 years \_\_\_\_\_  
5 - 9 years \_\_\_\_\_  
10 - 15 years \_\_\_\_\_  
16 - 20 years \_\_\_\_\_  
over 20 years \_\_\_\_\_  
all your life \_\_\_\_\_
13. What country did you live in before coming to Canada? United Kingdom \_\_\_\_\_  
Germany \_\_\_\_\_  
Italy \_\_\_\_\_  
U. S. A. \_\_\_\_\_  
Other (specify) \_\_\_\_\_
14. Of what country are you a citizen? Canada \_\_\_\_\_  
U. S. A. \_\_\_\_\_  
U. K. \_\_\_\_\_  
Other (specify) \_\_\_\_\_
15. What is your husband's occupation (or main wage-earner's if different from the husband)? (be specific) \_\_\_\_\_
16. In what age group are you as of your last birthday? under 25 years \_\_\_\_\_  
26 - 35 years \_\_\_\_\_  
36 - 55 years \_\_\_\_\_  
56 - 65 years \_\_\_\_\_  
over 65 years \_\_\_\_\_
17. Please indicate in which of these groups the total income of all wage-earners in your family fell in 1970. under \$3,000 \_\_\_\_\_  
\$3,000 - \$4,999 \_\_\_\_\_  
\$5,000 - \$6,999 \_\_\_\_\_  
\$7,000 - \$9,999 \_\_\_\_\_  
\$10,000-\$14,999 \_\_\_\_\_  
over \$15,000 \_\_\_\_\_
18. What is the highest level of school which you and your husband completed?



## Appendix C

Sample \_\_\_\_\_

	<u>Yourself</u>	<u>Husband</u>
No formal schooling	_____	_____
Some elementary school (Grades 1 - 6)	_____	_____
Completed Grade 6	_____	_____
Some High School	_____	_____
Completed High School	_____	_____

19. Have you and your husband completed, since secondary school. . .

	<u>Yourself</u>	<u>Husband</u>
Part of a vocational or technical course	_____	_____
A vocational or technical course of at least 3 months duration	_____	_____
Some apprenticeship	_____	_____
Complete apprenticeship	_____	_____
Some University	_____	_____
University degree or diploma	_____	_____

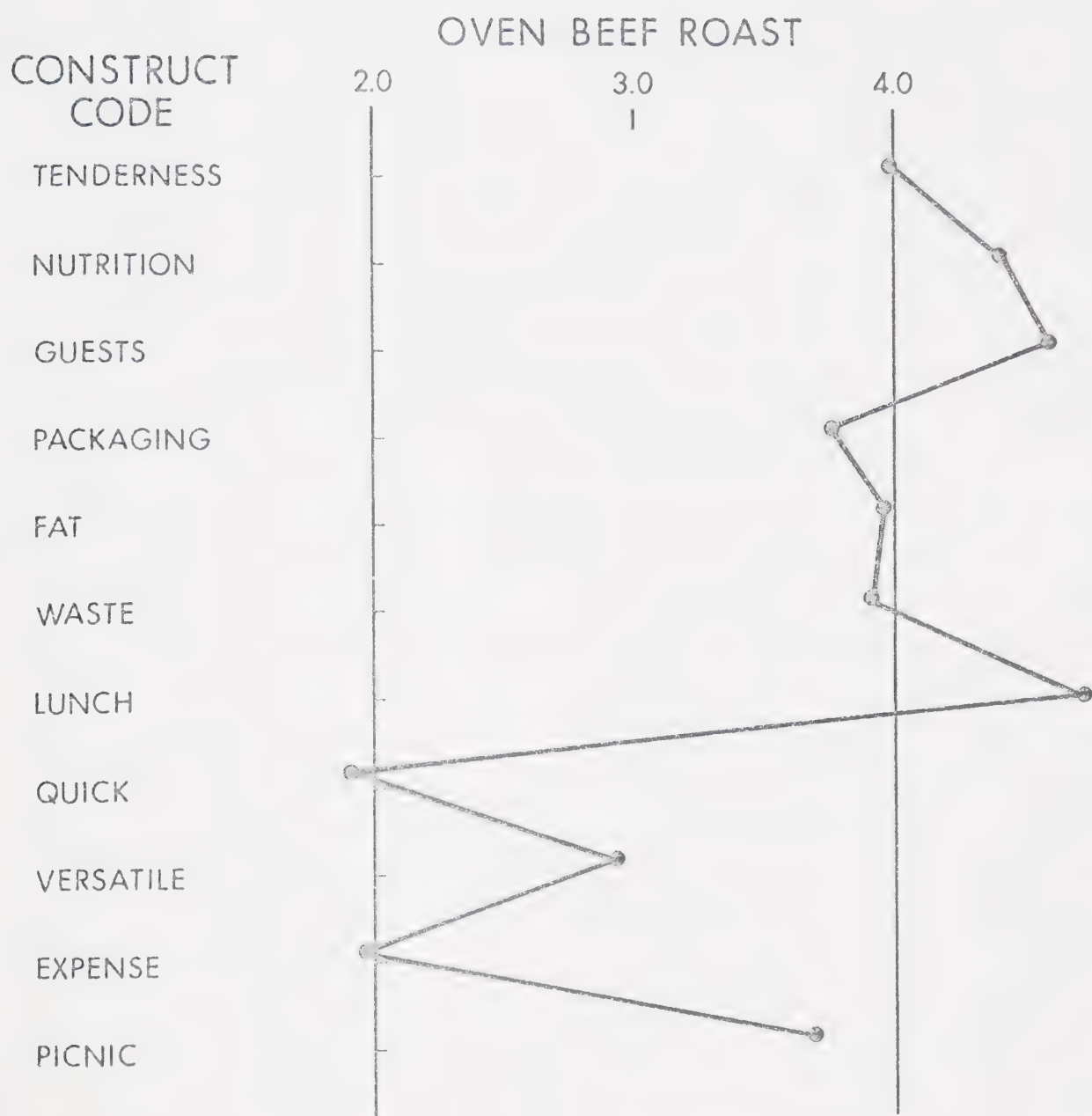


## APPENDIX D

### Image Profiles of the Meats and Meat Cuts

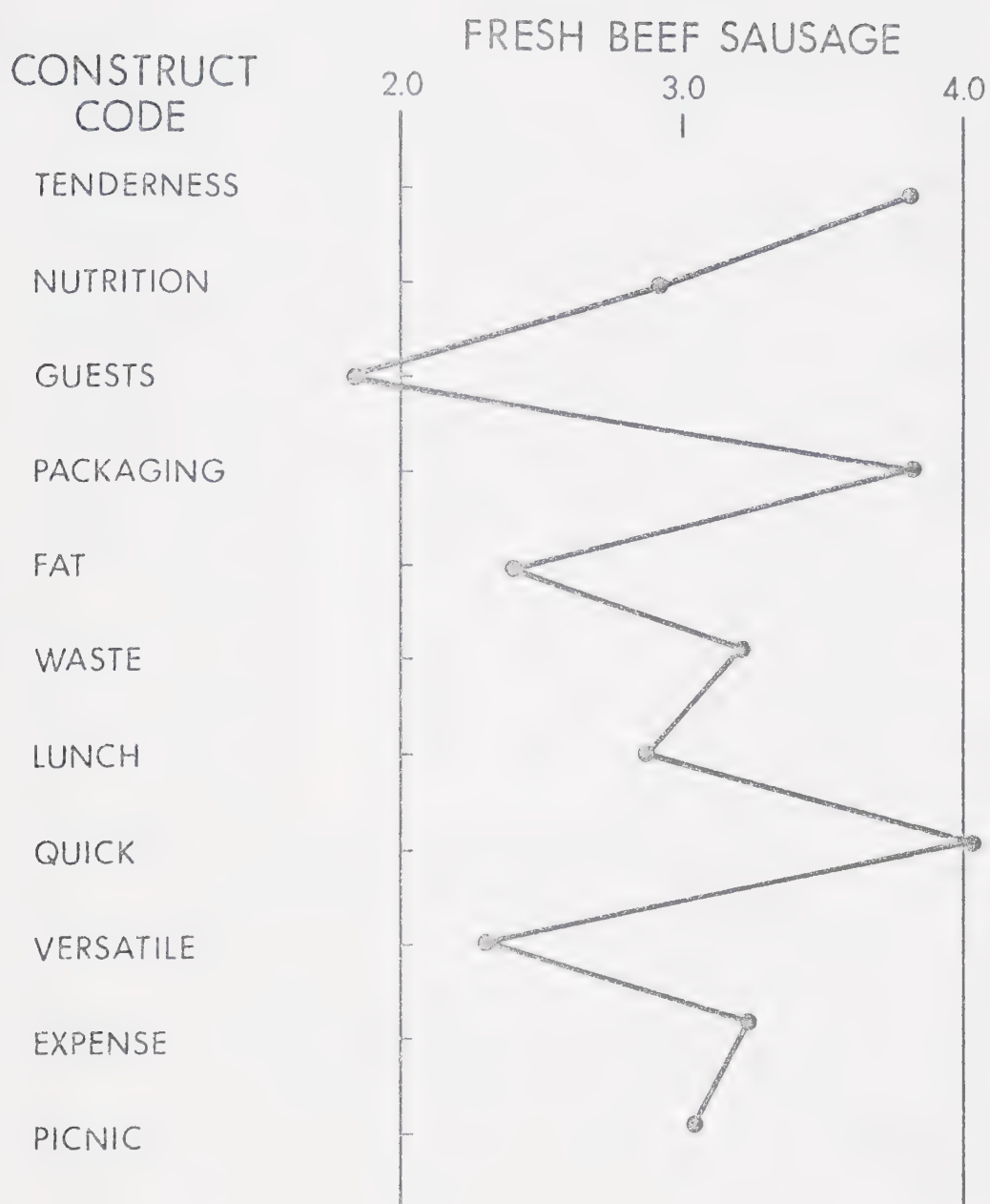
The profiles are based on the mean scores of the meats and meat cuts on the semantic differential scales. The construct codes are arranged in order of the degree of correlation between the constructs and "Would Buy". Thus unfavourable scores on constructs become decreasingly significant to overall acceptability from the top to the bottom construct. Mean scores of less than 2 and more than 4 were arbitrarily defined as outstanding.



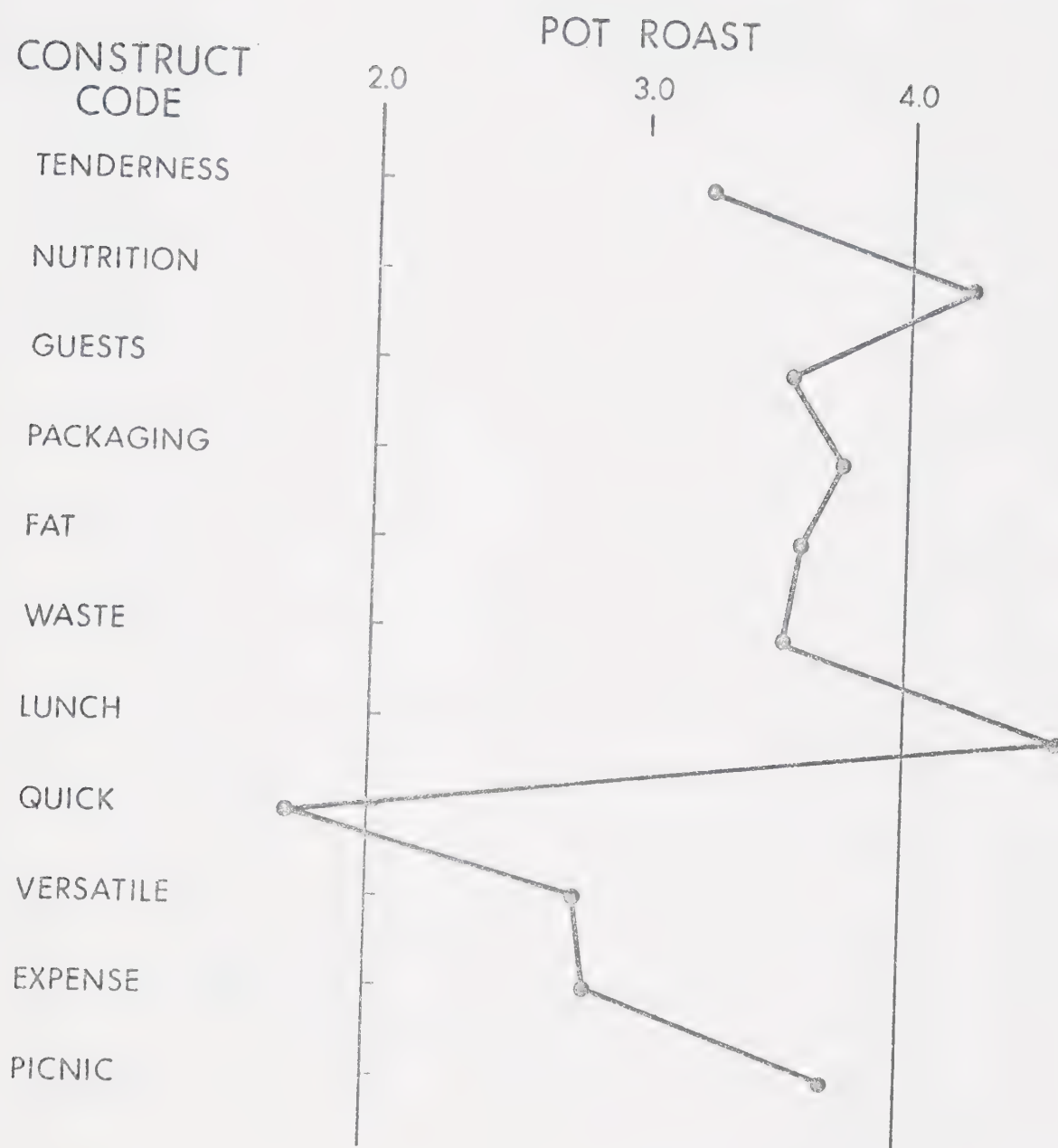




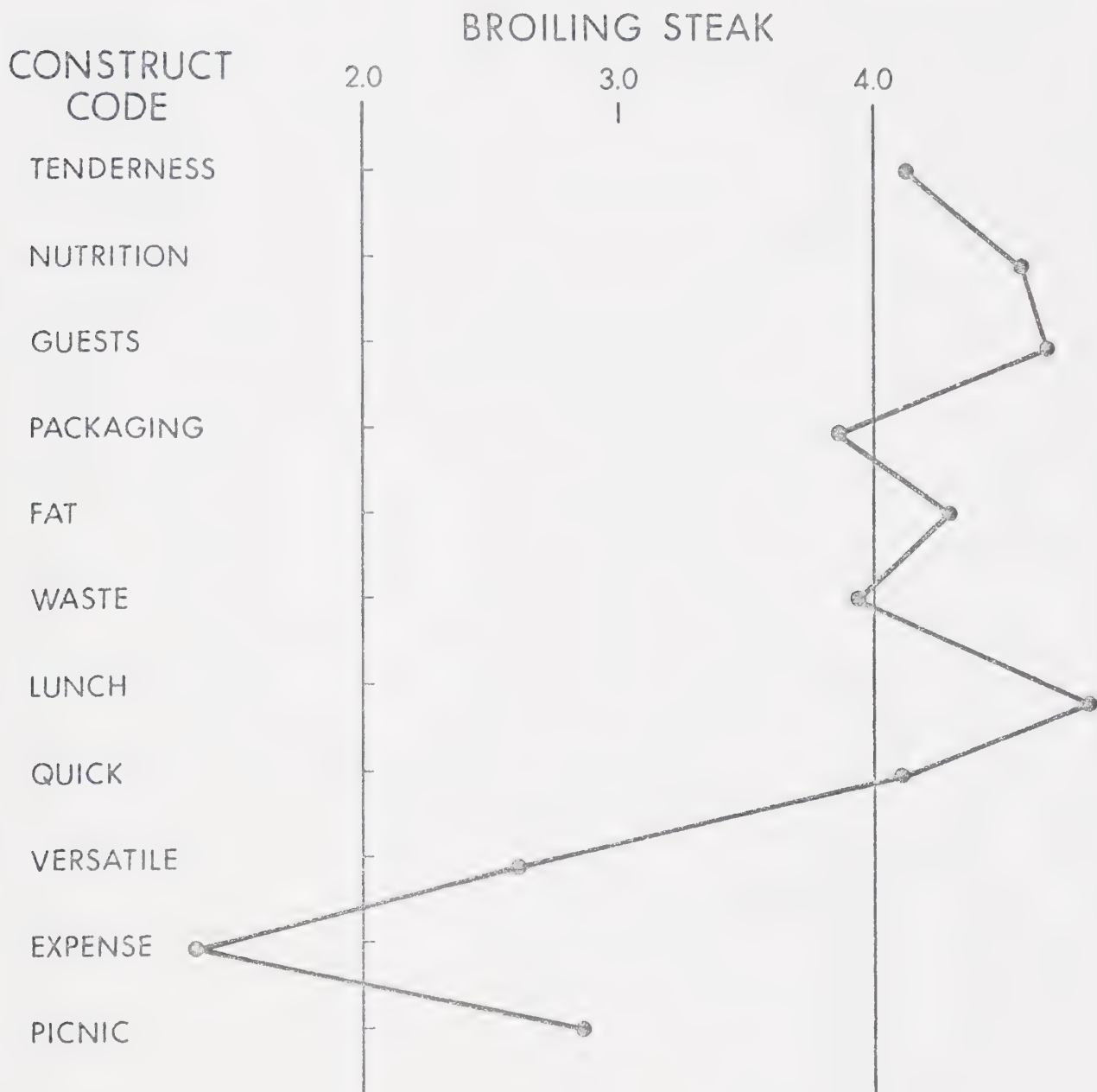




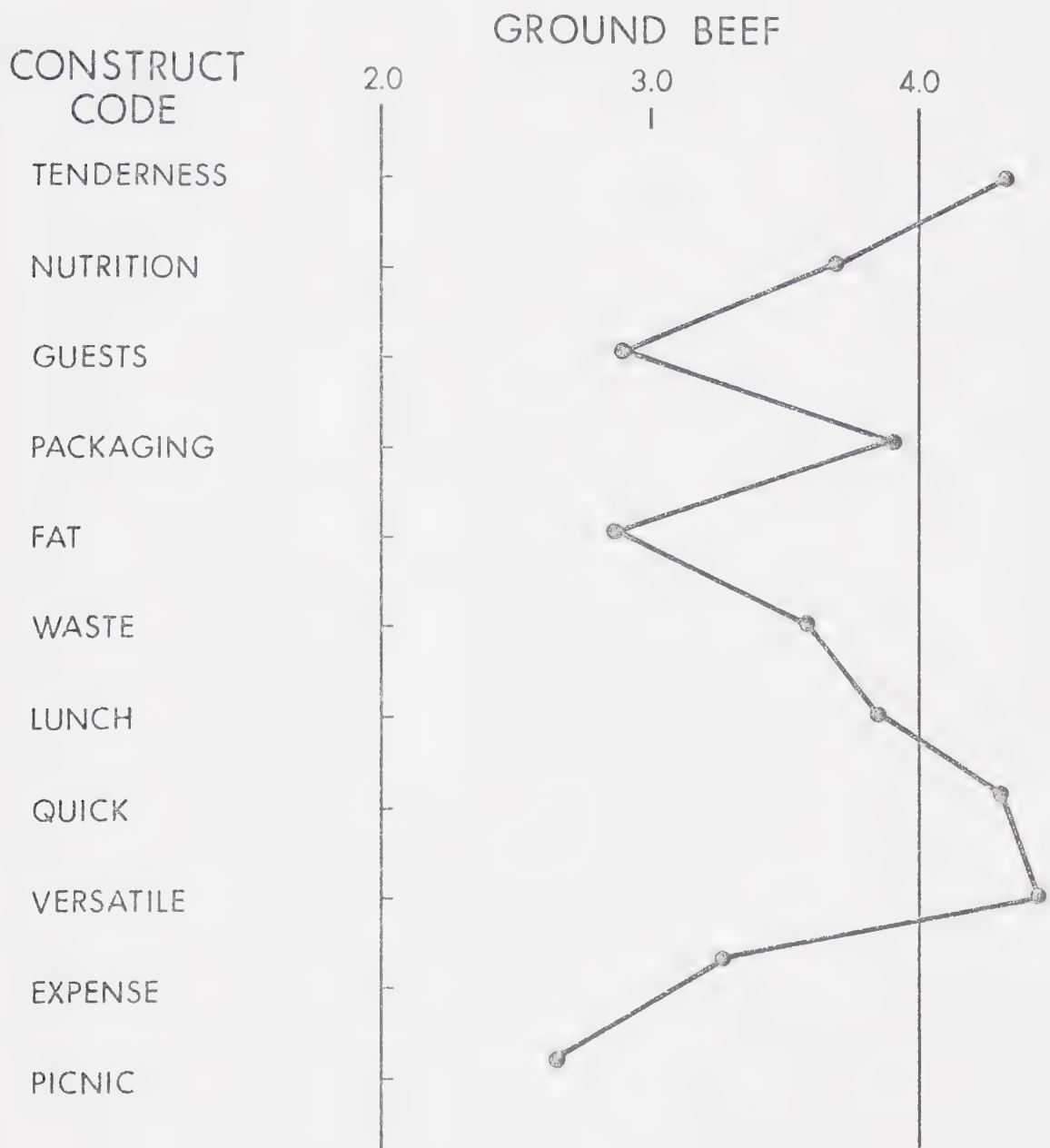






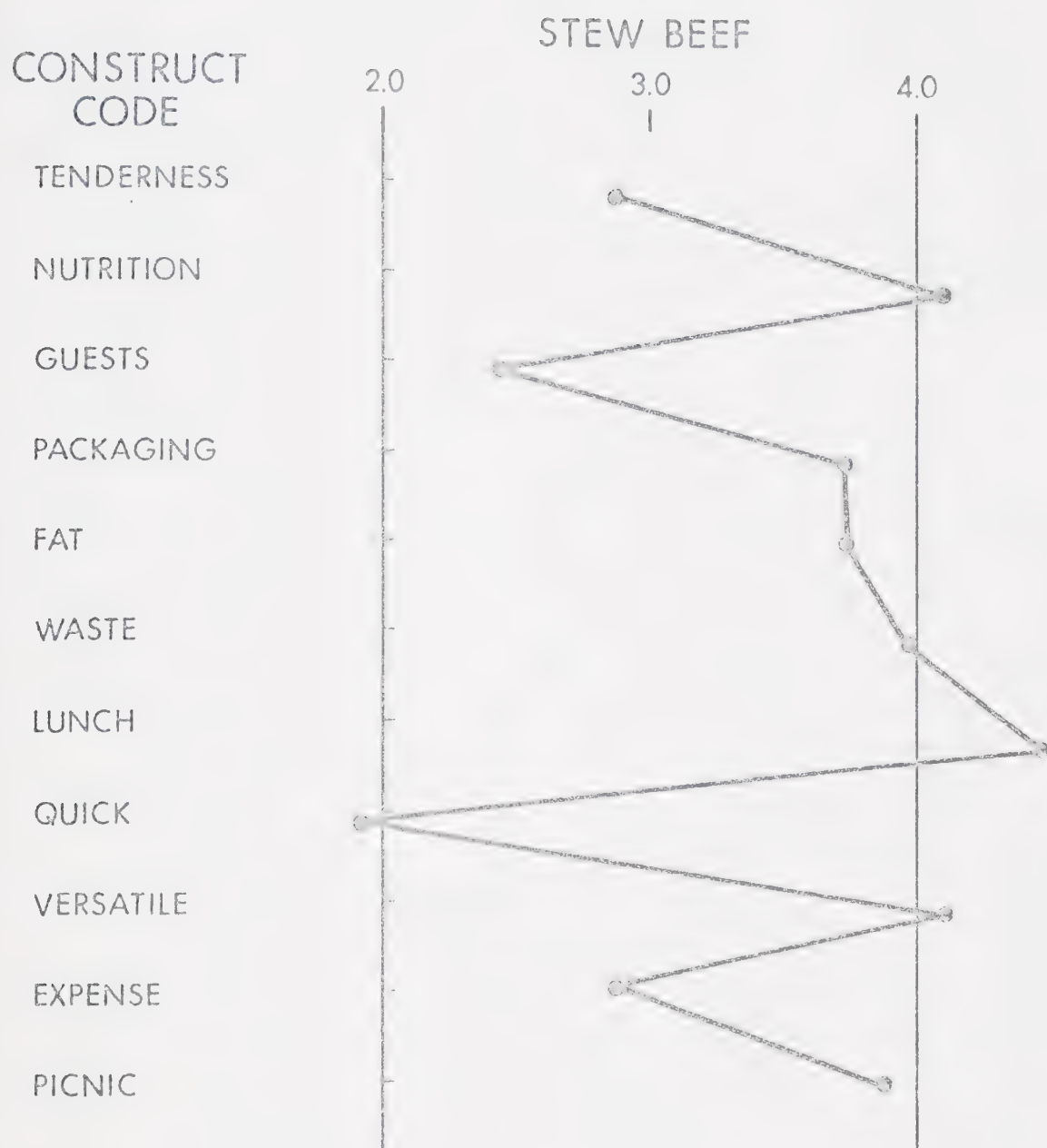




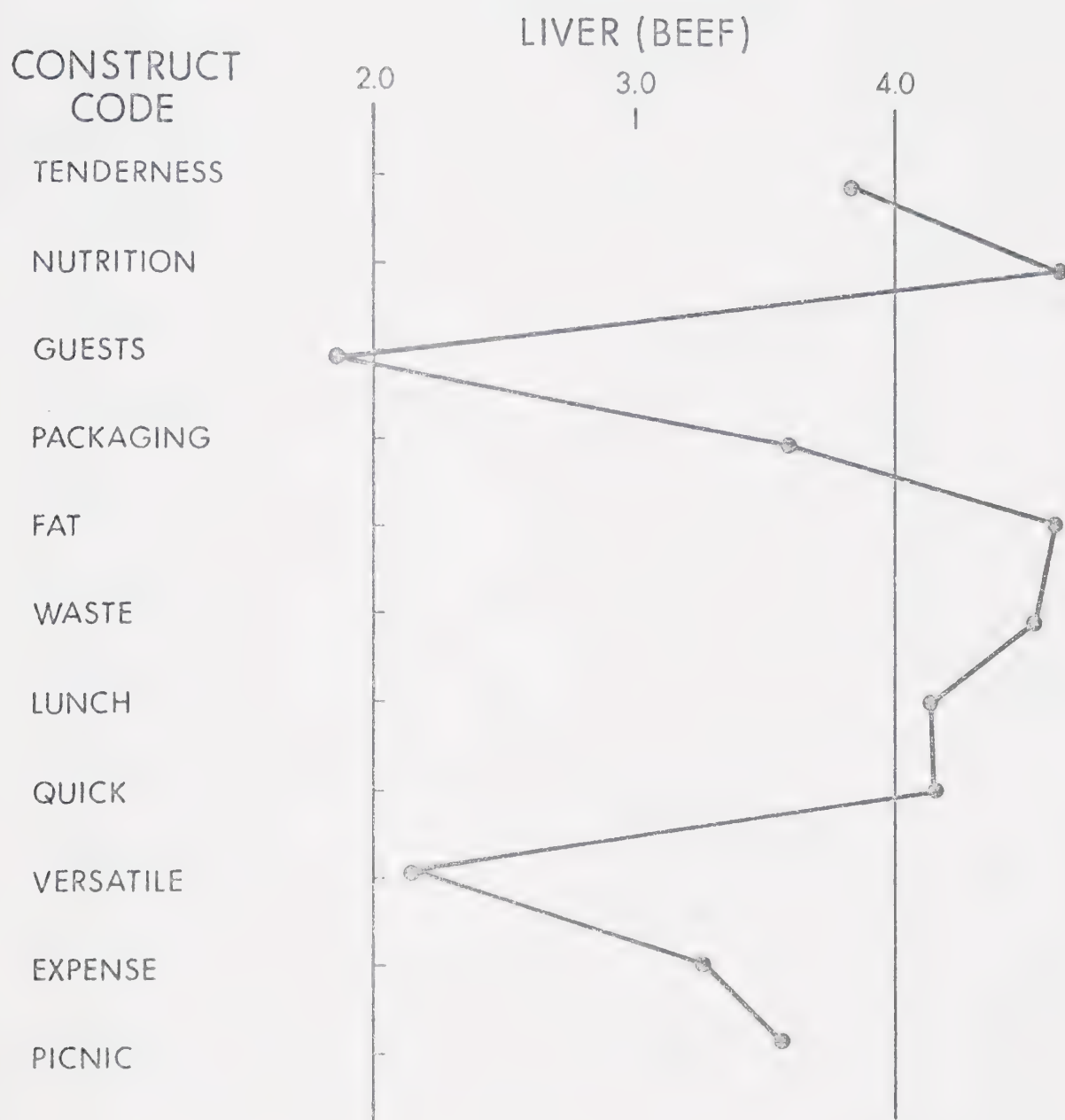




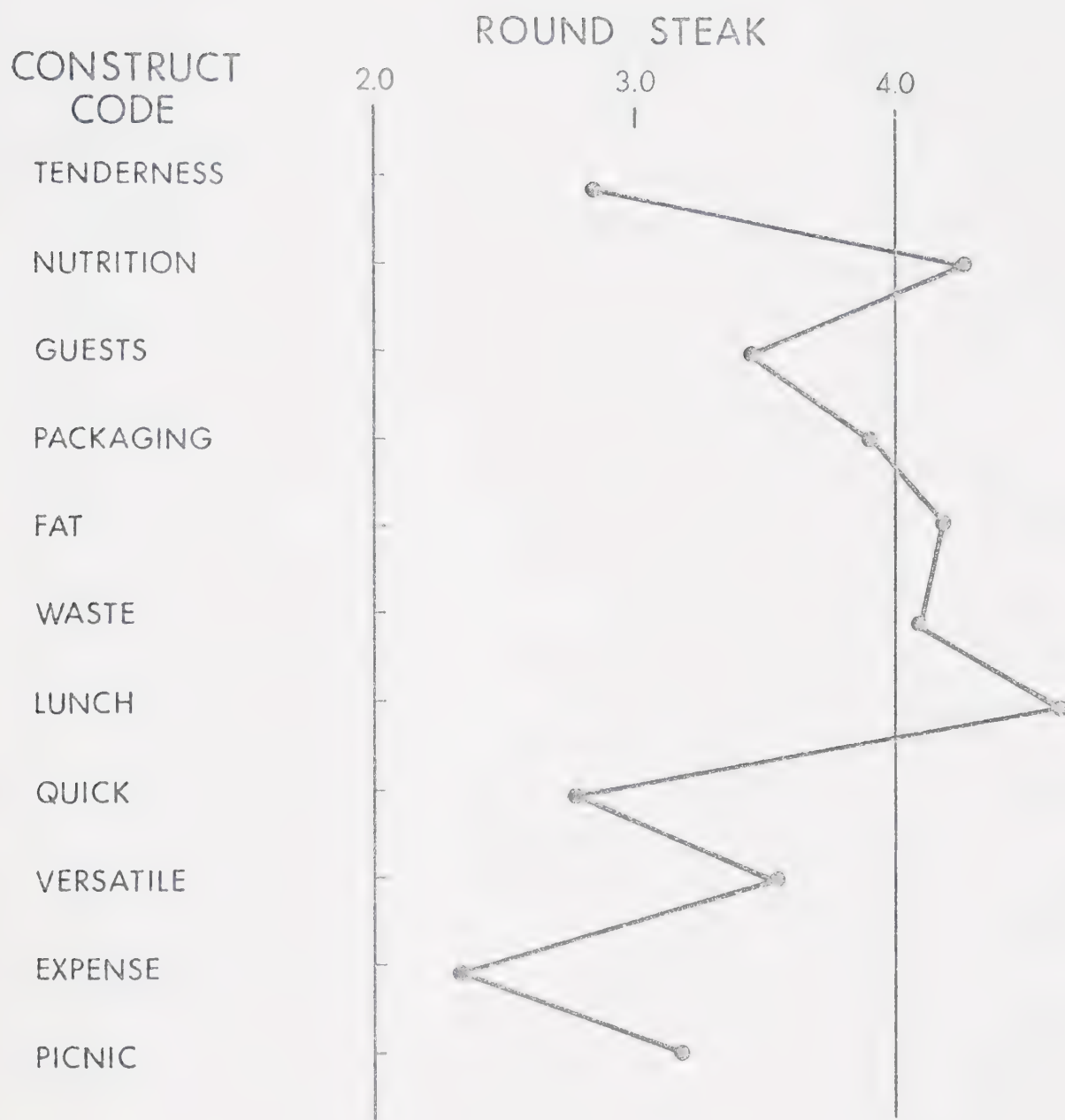




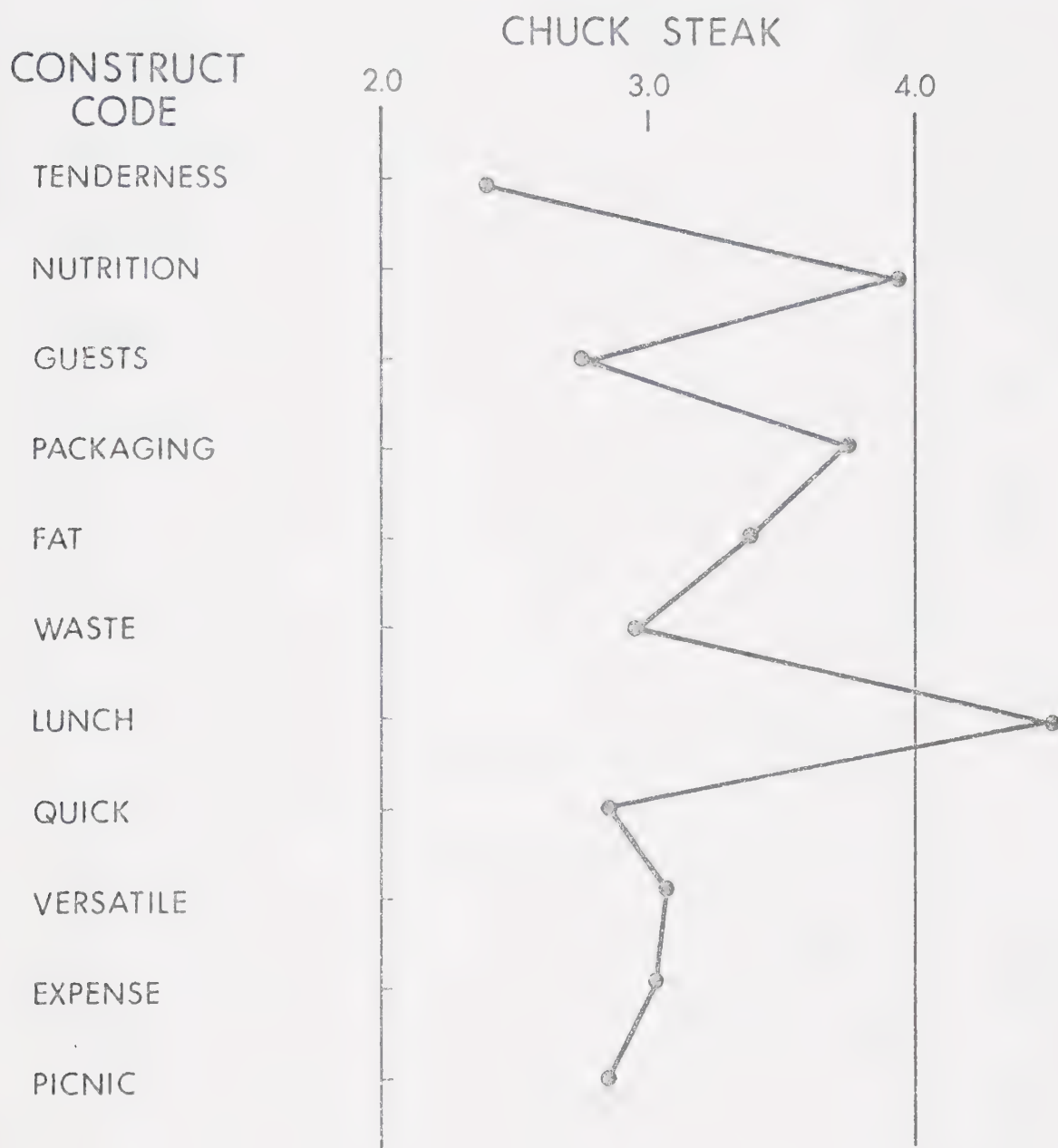






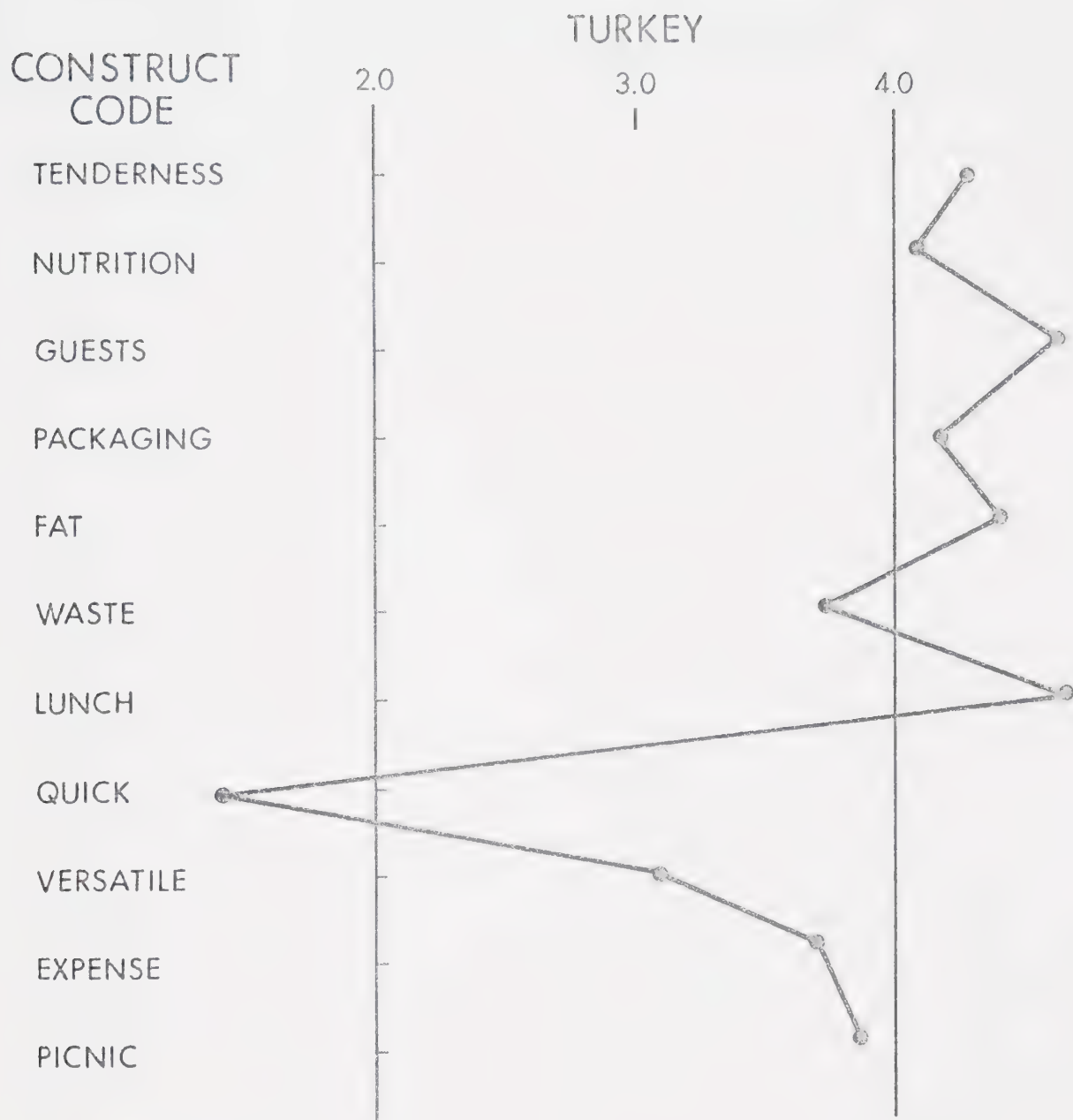




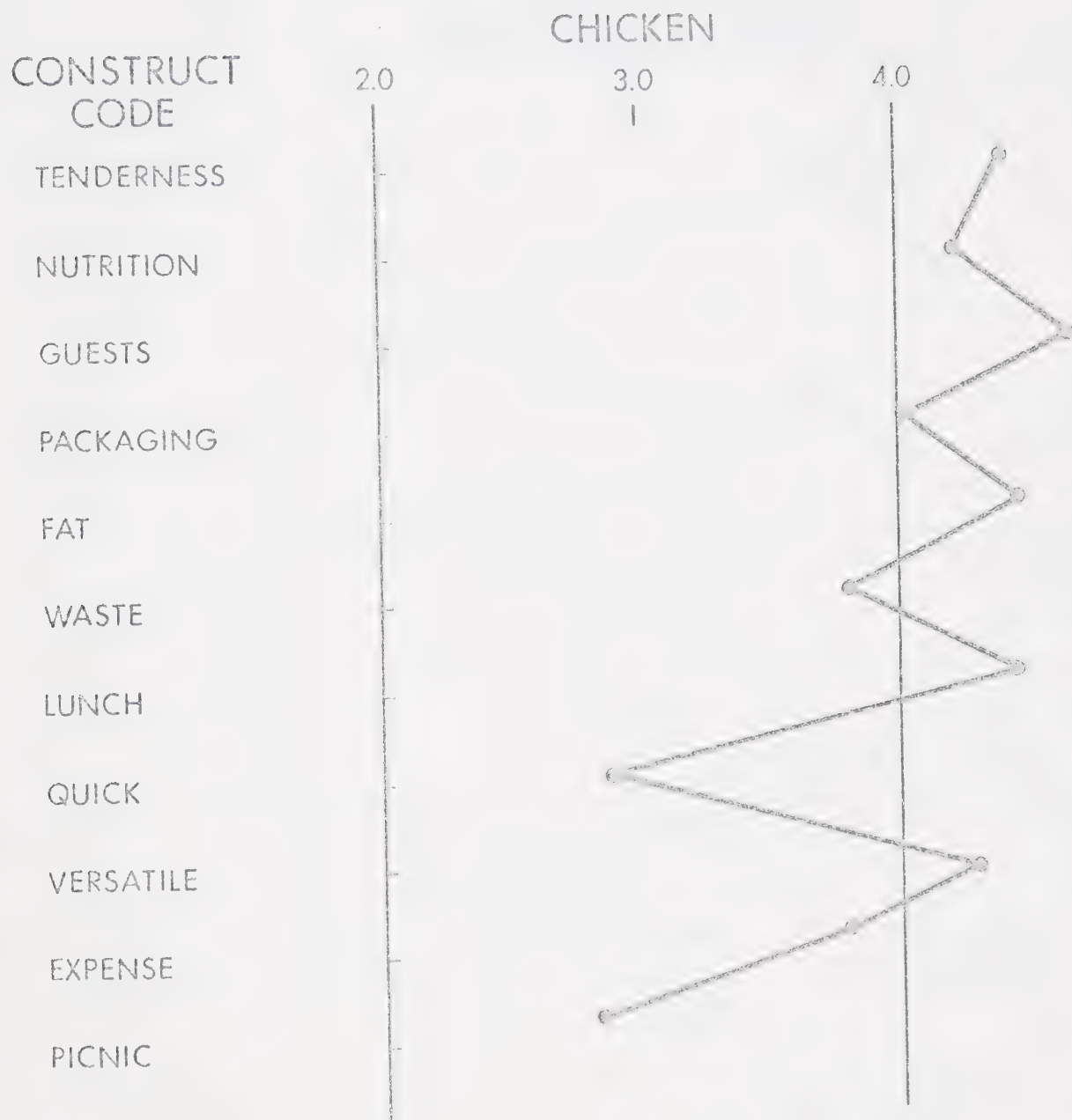




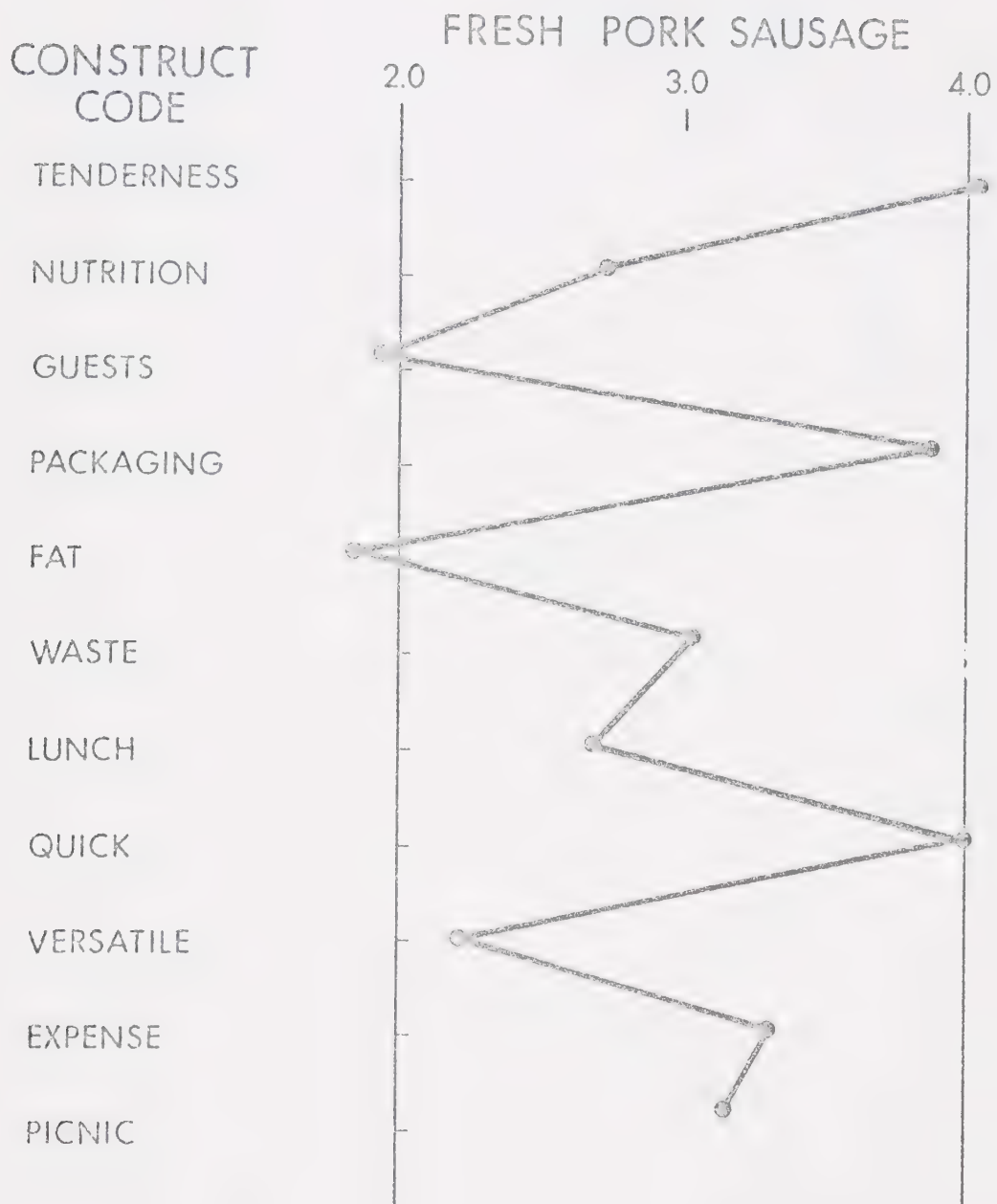




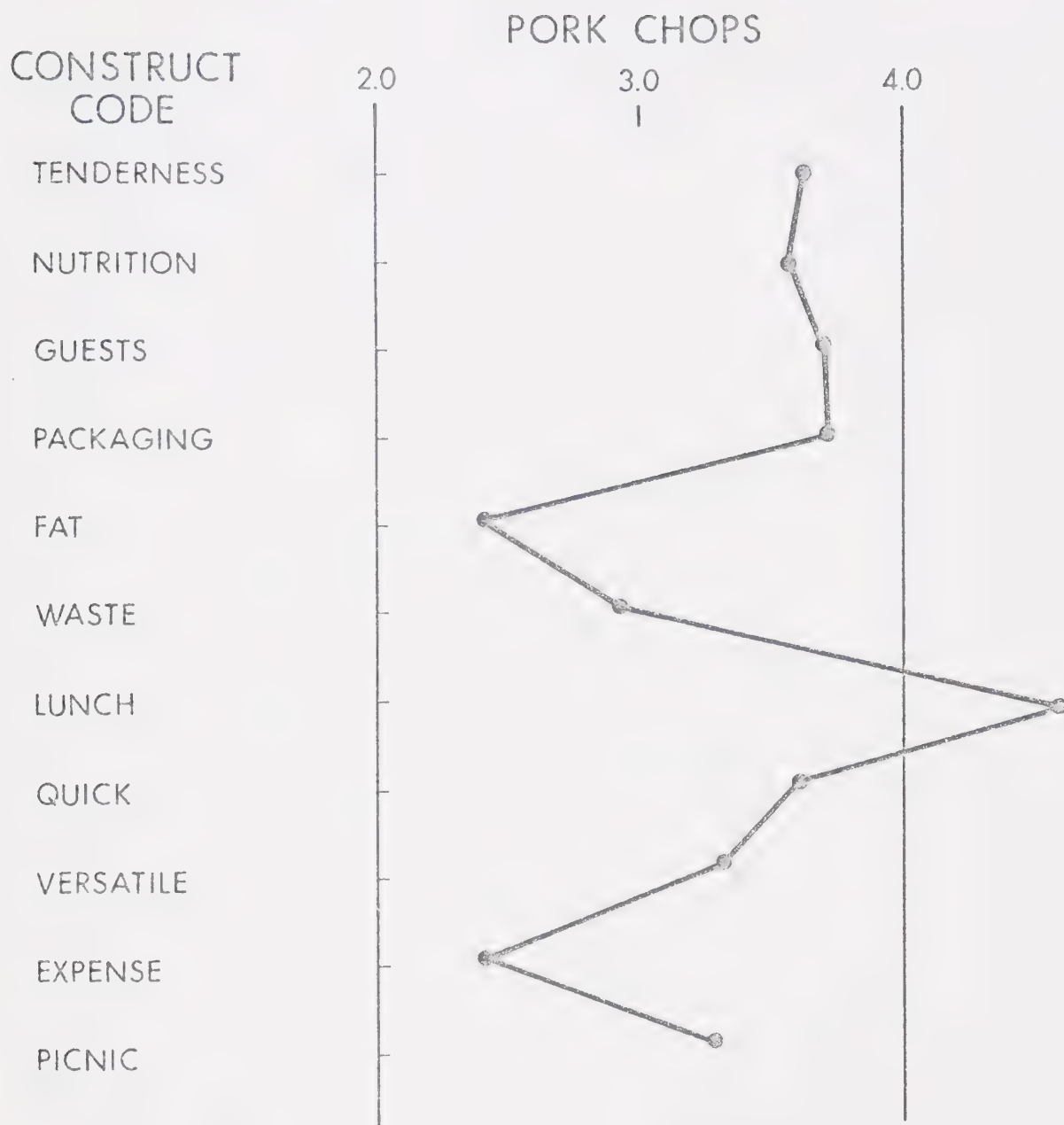






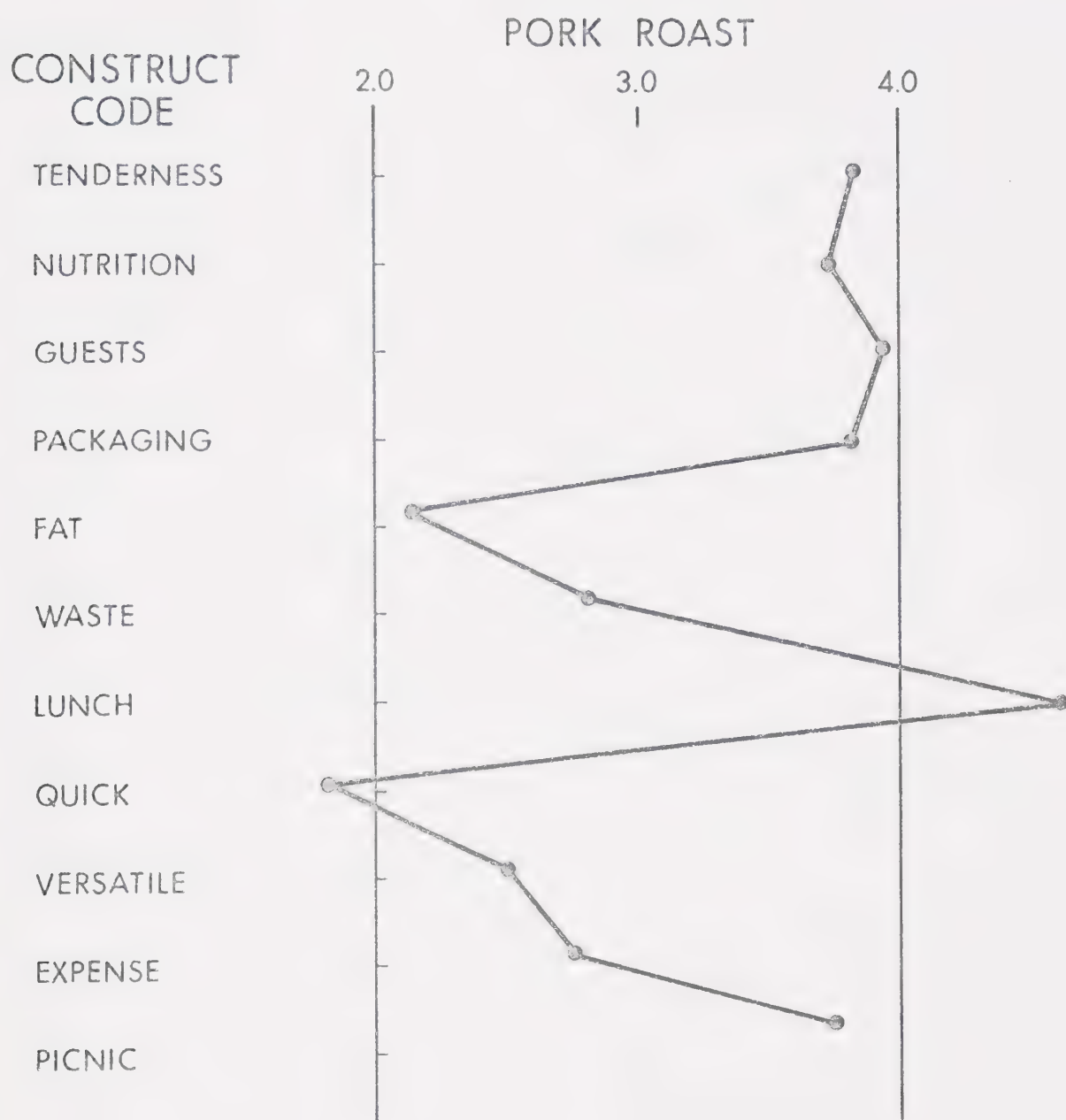




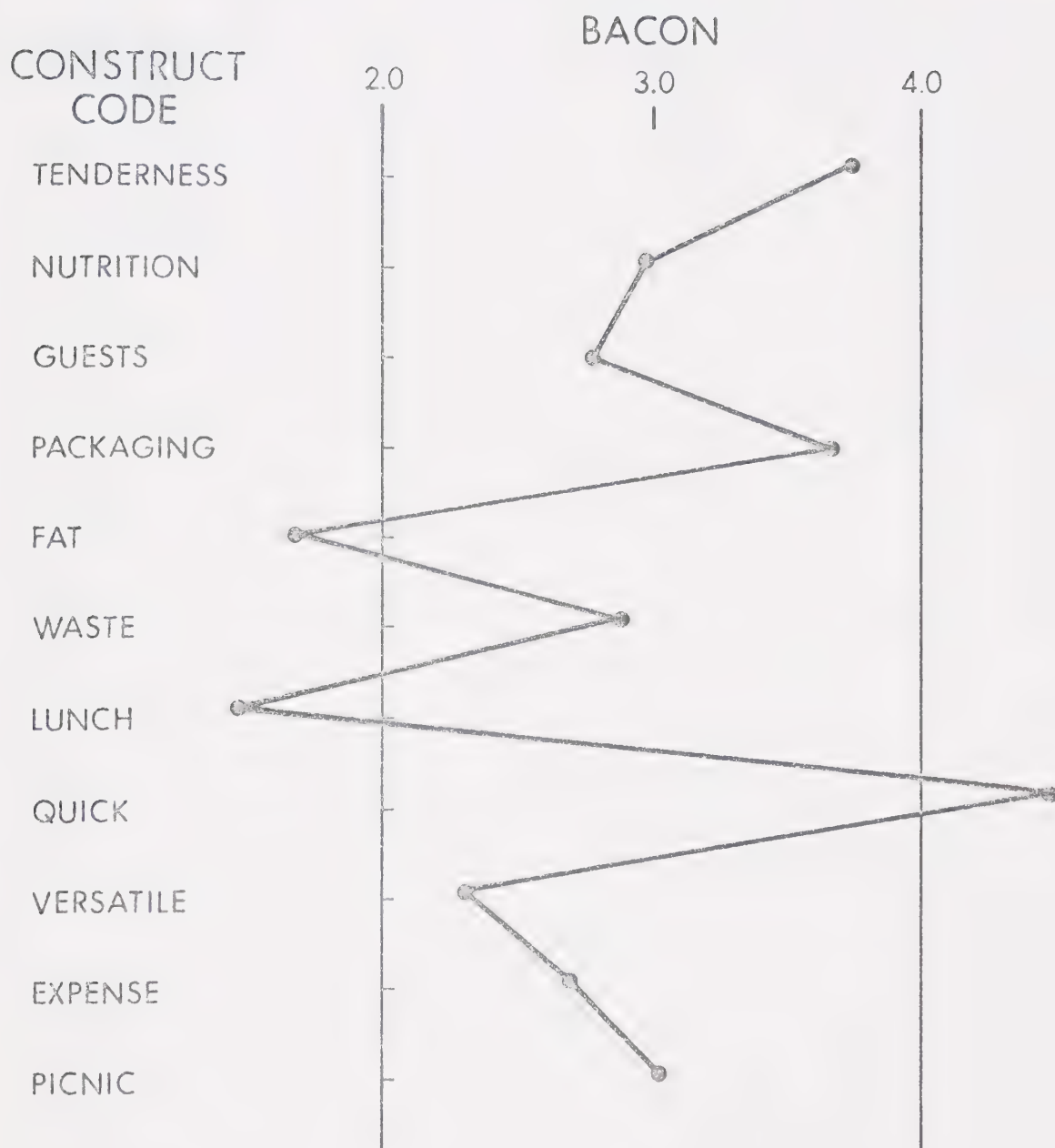




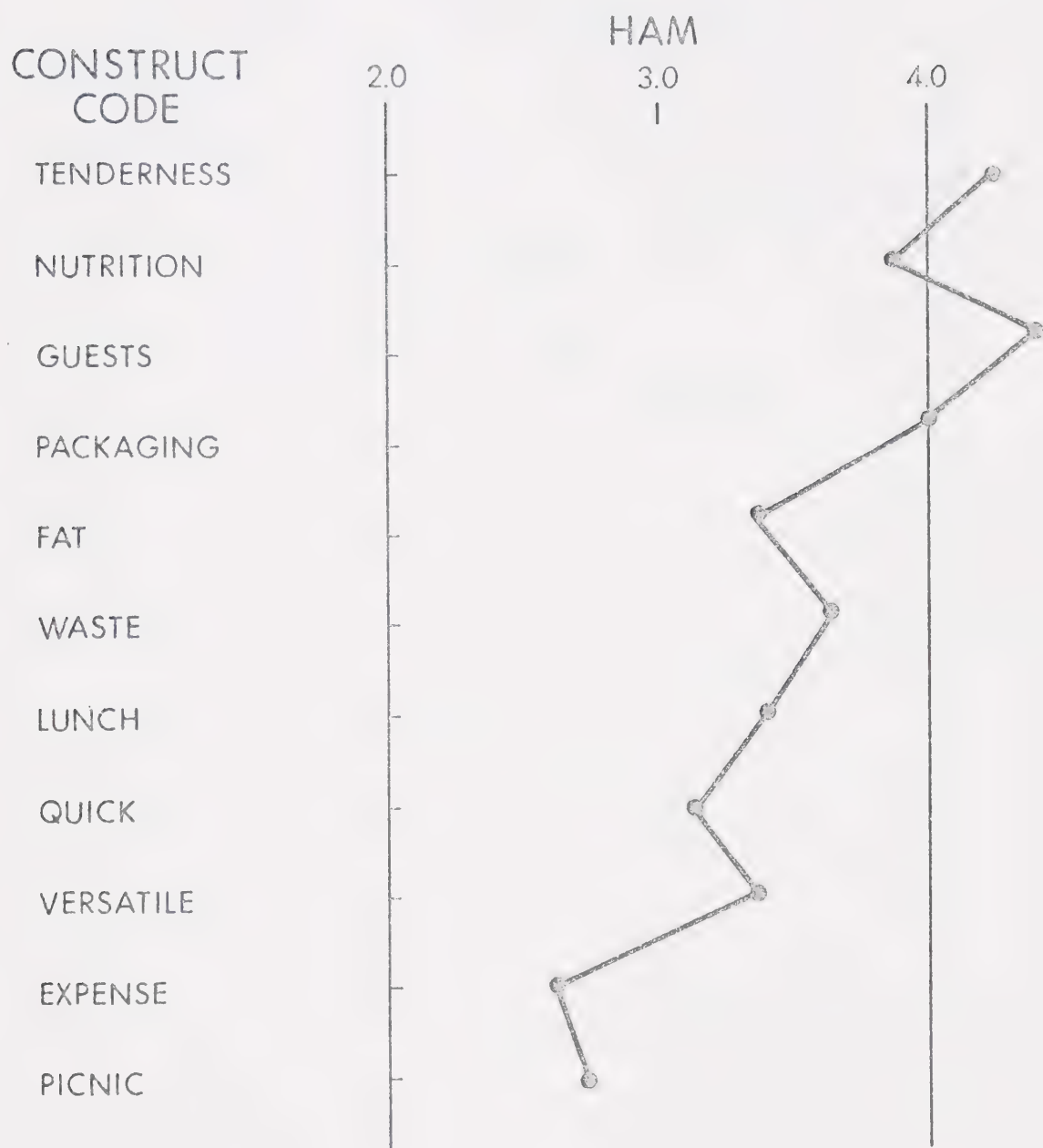




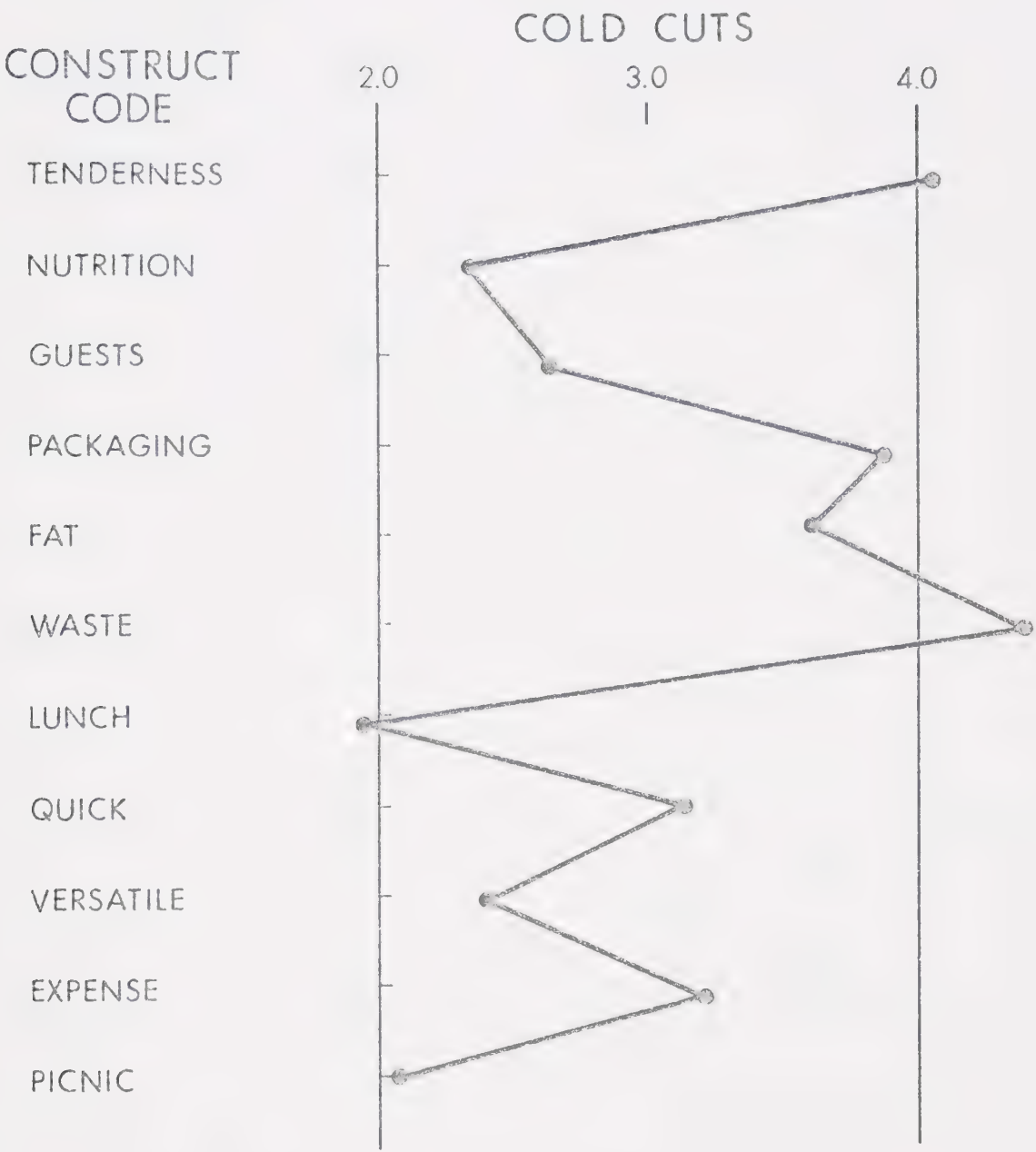






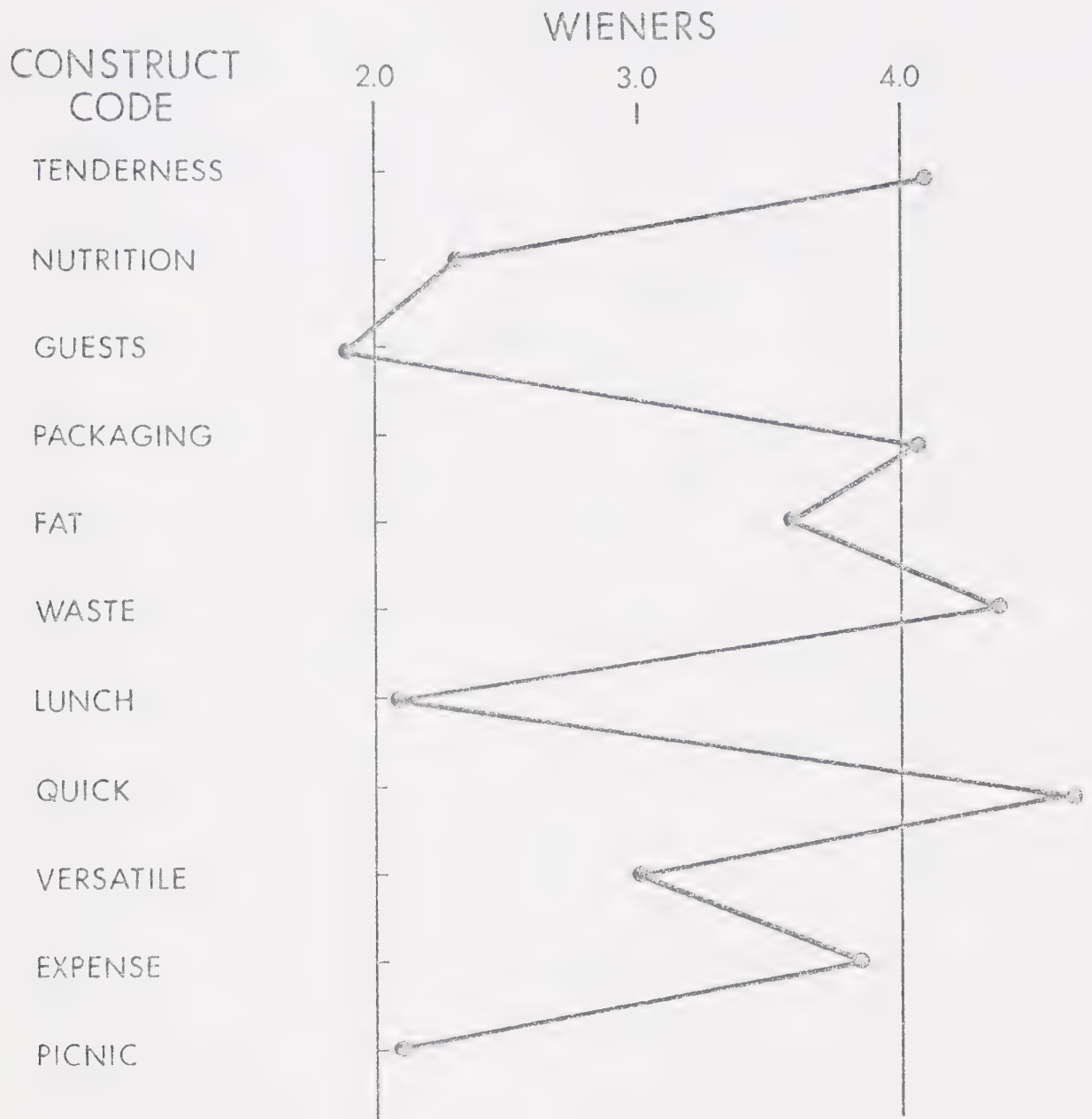




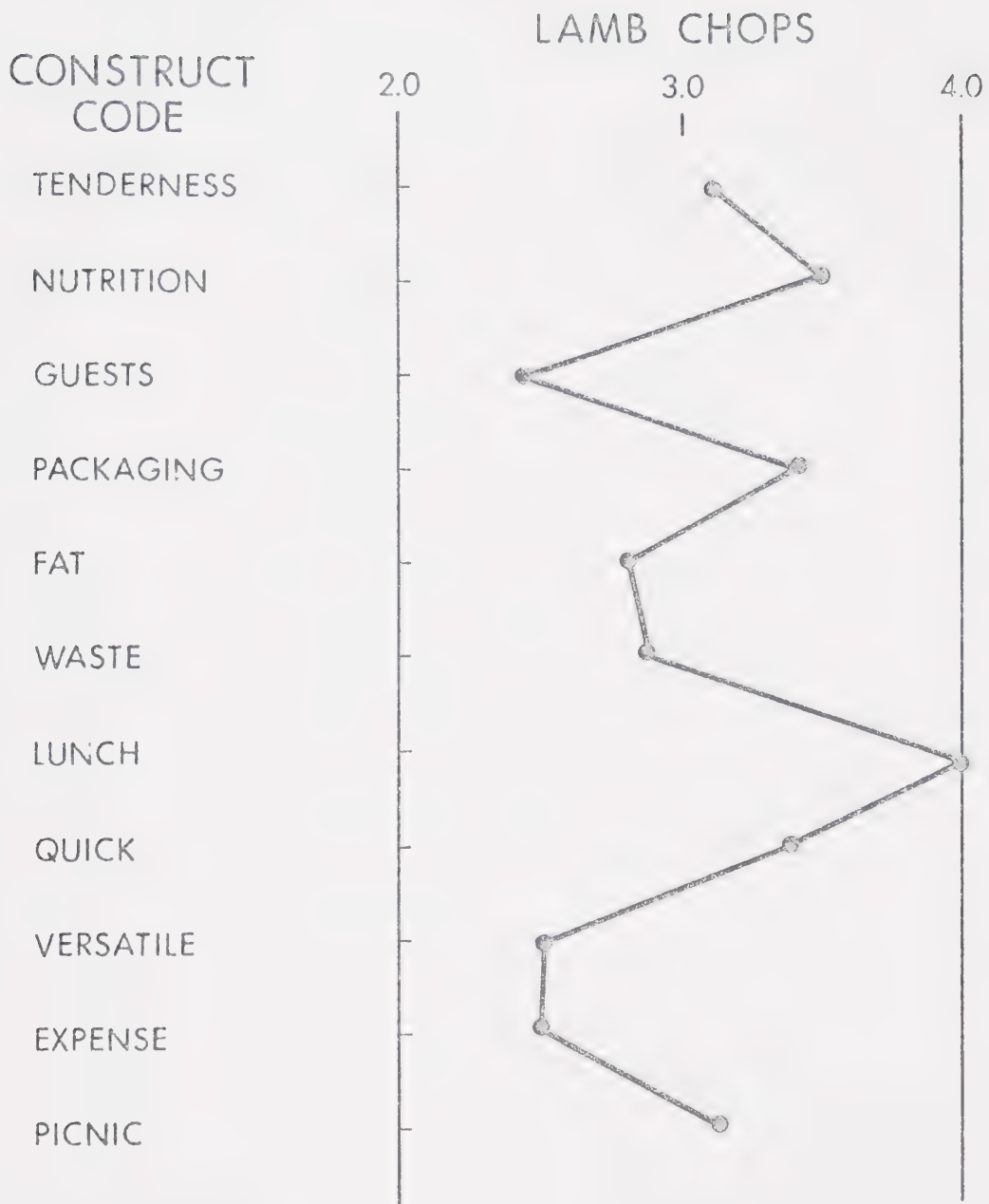




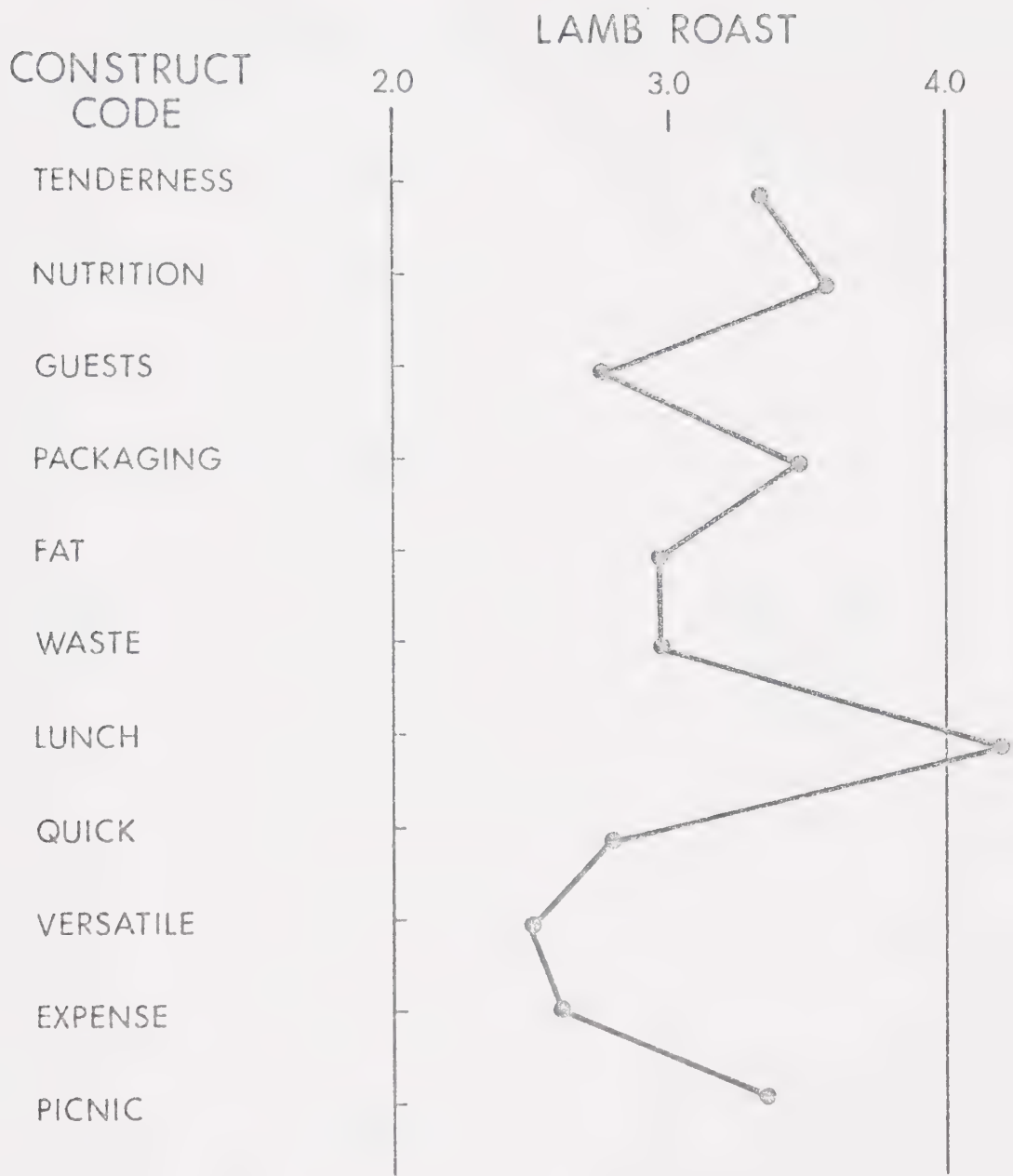














## APPENDIX E

Meat Cuts ranked for each Construct on the Basis of the Median Scores on the Semantic Differential.

median score		<u>Inexpensive</u>	
	5		
	4	turkey chicken wieners	
	3	fresh beef sausage pot roast ground beef stew beef liver (beef) chuck steak fresh pork sausage	pork roast bacon (side) cold cuts lamb chops lamb roast
	2	round steak pork chops ham	
	1	oven beef roast broiling steak	
		<u>Expensive</u>	





median score	5	<u>Very tender</u> broiling steak ground beef turkey chicken	ham cold cuts wieners
	4	oven beef roast fresh beef sausage fresh pork sausage pork chops pork roast bacon (side)	
	3	pot roast stew beef liver (beef) round steak lamb chops lamb roast	
	2	chuck steak	
	1	<u>Less tender</u>	



median score	5	<u>Would buy</u>	
		oven beef roast	pork chops
		pot roast	bacon
		broiling steak	ham
		stew beef	wieners
		round steak	ground beef
		turkey	
		chicken	
4		liver (beef)	
		chuck steak	
		fresh pork sausage	
		pork roast	
		cold cuts	
3		fresh beef sausage	
2			
1			
		lamb chops	lamb roast
		<u>Wouldn't buy</u>	



Median Score	<u>Lean</u>	
	5	broiling steak liver (beef) round steak chicken turkey
	4	oven beef roast pot roast stew beef
	3	ground beef chuck steak ham cold cuts wieners lamb chops lamb roast
	2	fresh beef sausage pork chops pork roast
	1	fresh pork sausage bacon (side)
		<u>Fatty</u>



Median Score		<u>Quick</u>
	5	fresh beef sausage broiling steak ground beef liver (beef) fresh pork sausage bacon (side) cold cuts wieners
	4	pork chops
	3	round steak chuck steak chicken ham lamb chops lamb roast
	2	
	1	oven beef roast pot roast stew beef turkey pork roast
		<u>Require long preparation</u>





Median Score	<u>Nutritious</u>	
	5	oven beef roast pot roast broiling steak stew beef liver (beef) round steak
		turkey chicken
	4	ground beef chuck steak pork chops pork roast ham
		lamb chops lamb roast
	3	fresh beef sausage fresh pork sausage bacon (side) cold cuts
	2	wieners
	1	
	<u>Less nutritious</u>	



## Appendix E

Median score	<u>Contain little waste</u>	
	5	stew beef liver (beef) round steak cold cuts
	4	oven beef roast pot roast broiling steak ground beef turkey chicken fresh pork sausage ham wieners
	3	fresh beef sausage chuck steak pork chops pork roast bacon (side) lamb chops lamb roast
	2	
	1	
		<u>Contain much waste</u>



Median score	<u>Versatile</u>	
	5	ground beef chicken
	4	round steak pork chops ham
	3	oven beef roast pot roast stew beef chuck steak turkey wieners lamb chops lamb roast
	2	fresh beef sausage broiling steak liver (beef) fresh pork sausage pork roast bacon (side) cold cuts
	1	<u>Not versatile</u>



## Appendix E

		<u>Would serve to special guests</u>
Median Score	5	oven beef roast broiling steak turkey chicken pork roast ham
	4	pot roast round steak pork chops
	3	ground beef chuck steak bacon (side) lamb roast
	2	stew beef cold cuts lamb chops
	1	fresh beef sausage liver (beef) fresh pork sausage wieners
		<u>Wouldn't serve to special guests</u>





		<u>Acceptable packaging</u>
Median Score	5	broiling steak ground beef round steak turkey chicken ham cold cuts wieners
	4	oven beef roast fresh beef sausage pot roast stew beef liver (beef) chuck steak fresh pork sausage pork chops port roast bacon (side)
	3	lamb chops lamb roast
	2	
	1	
		<u>Not acceptably packaged</u>



Median score	<u>Suitable for winter</u>	
	5	
	4	stew beef turkey
	3	broiling steak oven beef roast fresh beef sausage pot roast lamb chops lamb roast ground beef pork roast
		liver (beef) round steak chuck steak ham chicken fresh pork sausage pork chops bacon (side)
	2	cold cuts wieners
	1	
	<u>Suitable for summer</u>	



Median score	5	<u>Suitable for dinner</u>	
		oven beef roast	liver (beef)
		pot roast	round steak
		broiling steak	turkey
		ground beef	chuck steak
		chicken	pork chops
	4	stew beef	pork roast
		lamb chops	lamb roast
	3	fresh beef sausage	
		fresh pork sausage	
		ham	
	2		
		wieners	
	1		
		bacon	
		cold cuts	
		<u>Suitable for lunch</u>	



## APPENDIX F

Tests for Interviewer Effect within Cities and Socioeconomic Groups.

The data in the tables in Appendix F are the chi-square values from tests for independence of the data. The tests marked "\_\_\_" indicate that the test was unreliable and the result could not be used. The level of significance is indicated: -

\* Significance at the 5% level

\*\* 1% level

\*\*\* 0.1% level





## Calgary low socioeconomic (2 degrees of freedom)

CONSTRUCT CODE	meat cuts							
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak
EXPENSE	_____	8.44*	4.04	_____	4.04	_____	1237***	3.96
TENDERNESS	_____	_____	_____	_____	_____	1.49	1.50	_____
WOULD BUY	1.49	_____	_____	1.82	_____	5.08	_____	1.96
FAT	4.15	2.30	0.65	1.02	1.24	_____	5.05	_____
QUICK	_____	_____	_____	_____	0.26	_____	0.36	0.24
NUTRITION	2.14	1.76	_____	5.94	_____	2.15	_____	_____
WASTE	5.42	0.92	2.08	_____	_____	0.42	_____	1.71
VERSATILE	_____	_____	_____	0.89	2.50	_____	_____	_____
GUESTS	_____	1.36	_____	3.65	_____	_____	_____	_____
PACKAGING	6.72*	_____	_____	_____	_____	3.78	_____	1.13
PICNIC	0.85	1.23	_____	1.11	_____	1.58	0.46	1.07
LUNCH	_____	_____	_____	0.91	0.22	_____	_____	_____



[illegible]



## Calgary high socioeconomic (4 degrees of freedom)

CONSTRUCT CODE	meat cuts							
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak
EXPENSE	_____	_____	7.13	_____	_____	_____	7.51	_____
TENDERNESS	_____	_____	_____	_____	_____	5.03	_____	_____
WOULD BUY	_____	_____	_____	_____	_____	0.43	_____	_____
FAT	_____	1.70	9.44	_____	_____	_____	_____	_____
QUICK	_____	_____	3.42	_____	_____	_____	_____	_____
NUTRITION	_____	_____	_____	_____	_____	6.07	_____	_____
WASTE	_____	0.66	7.44	_____	_____	8.75	_____	_____
VERSATILE	_____	_____	_____	_____	2.28	_____	_____	_____
GUESTS	_____	_____	_____	_____	_____	_____	_____	_____
PACKAGING	5.15	2.46	_____	_____	_____	1.10	0.60	_____
PICNIC	_____	_____	_____	7.80	1.72	3.76	_____	_____
LUNCH	_____	_____	_____	2.49	_____	_____	_____	_____



## Edmonton low socioeconomic (2 degrees of freedom)

CONSTRUCT CODE	meat cuts							
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak
EXPENSE	_____	0.55	1.03	_____	1.11	_____	0.52	_____
TENDERNESS	_____	_____	_____	_____	_____	1.74	_____	_____
WOULD BUY	_____	_____	_____	_____	_____	4.26	4.27	_____
FAT	_____	_____	0.99	_____	_____	0.50	_____	_____
QUICK	_____	_____	_____	_____	0.51	_____	0.89	_____
NUTRITION	_____	_____	_____	_____	_____	3.22	_____	_____
WASTE	2.42	_____	1.71	0.84	_____	1.27	2.41	_____
VERSATILE	_____	_____	_____	_____	0.09	_____	_____	_____
GUESTS	_____	1.39	_____	0.15	3.84	_____	_____	_____
PACKAGING	_____	_____	_____	_____	_____	1.02	_____	0.31
PICNIC	_____	_____	_____	_____	_____	2.94	2.54	_____
LUNCH	_____	_____	_____	1.51	4.88	_____	_____	_____





## Edmonton medium socioeconomic (4 degrees of freedom)

CONSTRUCT CODE	meat cuts							
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak
EXPENSE	5.92	3.61	8.88	_____	2.69	2.66	3.95	_____
TENDERNESS	_____	3.98	_____	5.76	_____	5.47	7.20	_____
WOULD BUY	_____	_____	_____	2.36	_____	1.77	_____	_____
FAT	_____	1.31	0.60	4.19	_____	2.48	2.95	_____
QUICK	_____	4.27	1.50	_____	2.23	4.11	2.93	6.64
NUTRITION	_____	_____	_____	2.72	_____	5.98	_____	_____
WASTE	8.16	4.06	6.56	1.16	_____	3.48	2.60	4.02
VERSATILE	_____	_____	1.59	_____	0.68	3.55	_____	_____
GUESTS	_____	1.78	_____	2.98	1.31	_____	_____	_____
PACKAGING	0.98	6.99	_____	_____	_____	2.41	0.53	_____
PICNIC	1.96	7.18	_____	1.57	2.90	2.76	12.06*	6.36
LUNCH	_____	_____	_____	6.37	5.27	_____	2.30	_____



## Edmonton high socioeconomic (2 degrees of freedom)

CONSTRUCT CODE	meat cuts							
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak
EXPENSE	_____	0.49	1.89	_____	_____	_____	0.93	_____
TENDERNESS	_____	_____	_____	_____	_____	_____	0.87	_____
WOULD BUY	_____	_____	_____	_____	_____	1.25	_____	_____
FAT	_____	0.22	_____	_____	_____	_____	_____	_____
QUICK	_____	_____	_____	_____	_____	0.23	2.25	_____
NUTRITION	_____	2.53	0.01	_____	_____	2.40	_____	_____
WASTE	0.93	_____	0.34	_____	_____	1.27	_____	0.14
VERSATILE	_____	_____	_____	_____	_____	1.01	_____	_____
GUESTS	_____	_____	_____	_____	_____	_____	_____	_____
PACKAGING	0.82	_____	_____	_____	_____	_____	_____	_____
PICNIC	_____	_____	_____	_____	0.16	3.18	0.32	1.38
LUNCH	_____	_____	_____	1.76	11.06**	_____	_____	_____



## Vancouver low socioeconomic (4 degrees of freedom)

CONSTRUCT CODE	meat cuts							
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak
EXPENSE	_____	8.47	10.59*	_____	_____	_____	8.64	_____
TENDERNESS	_____	_____	_____	_____	_____	1.25	_____	_____
WOULD BUY	_____	_____	_____	3.65	_____	6.82	_____	_____
FAT	_____	5.37	7.81	2.74	_____	3.27	3.48	8.48
QUICK	_____	_____	_____	_____	4.46	2.07	4.46	7.47
NUTRITION	_____	_____	_____	_____	_____	4.21	_____	_____
WASTE	_____	14.42**	19.98**	_____	_____	3.35	3.84	4.63
VERSATILE	_____	_____	_____	_____	4.34	_____	_____	_____
GUESTS	_____	_____	_____	3.14	3.84	_____	_____	_____
PACKAGING	11.07*	2.08	_____	3.62	4.93	6.69	3.07	1.79
PICNIC	3.59	1.18	_____	5.87	6.40	5.83	9.13	5.48
LUNCH	_____	_____	_____	7.13	_____	_____	_____	_____



## Vancouver medium socioeconomic (6 degrees of freedom)

[illegible]





## Vancouver high socioeconomic (2 degrees of freedom)

CONSTRUCT CODE	meat cuts							
	oven beef roast	fresh beef sausage	pot roast	broiling steak	ground beef	stew beef	liver (beef)	round steak
EXPENSE	_____	_____	1.80	_____	_____	_____	_____	_____
TENDERNESS	_____	_____	_____	_____	_____	0.76	_____	_____
WOULD BUY	_____	_____	_____	_____	_____	5.13	_____	_____
FAT	_____	_____	_____	_____	_____	_____	_____	_____
QUICK	_____	_____	_____	_____	_____	_____	_____	_____
NUTRITION	_____	_____	_____	_____	_____	_____	_____	_____
WASTE	_____	1.71	_____	1.01	_____	_____	_____	_____
VERSATILE	_____	_____	_____	_____	_____	_____	_____	_____
GUESTS	_____	_____	_____	_____	_____	_____	_____	_____
PACKAGING	_____	_____	_____	_____	_____	_____	0.88	_____
PICNIC	_____	_____	_____	_____	_____	_____	_____	0.55
LUNCH	_____	_____	_____	1.08	_____	5.18	_____	_____















**B30030**